

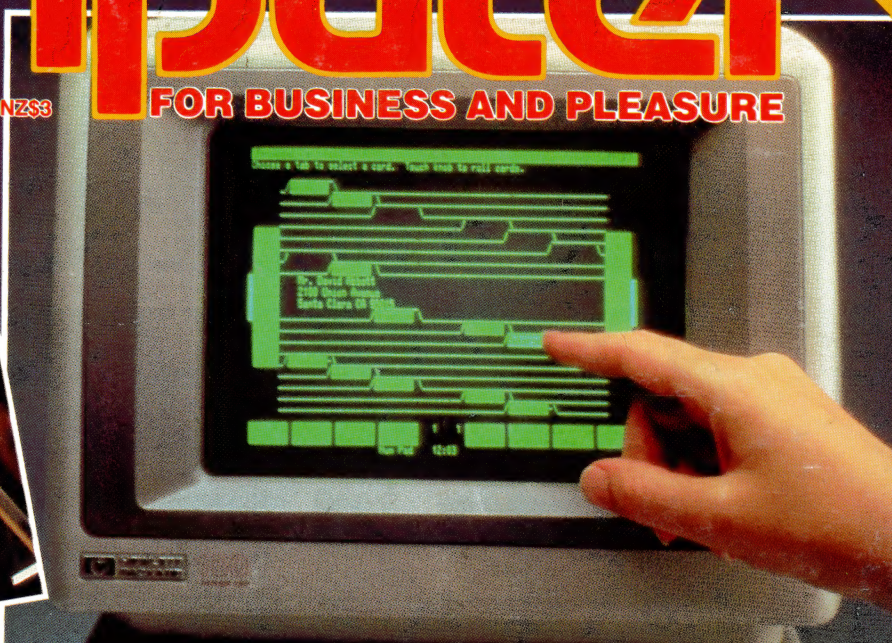
your computer

No.1
AUSTRALIA'S
TOP-SELLING
COMPUTER
MAGAZINE
AUDITED SALES

GIANT
Pocket
Programs Special!

JANUARY, 1984 \$2.00* NZ\$3

FOR BUSINESS AND PLEASURE



LAS VEGAS 'COMDEX' EXHIBITION — SPECIAL REPORT



- ★ TUTORIALS
- ★ REVIEWS
- ★ USER GROUP LIST
- ★ EXPANSION HINTS

ISSN 0725-3931
Registered for posting as a publication — Publication number NBP4384

JUST VOTED PERSONAL COMPUTER OF THE YEAR.



The Advanced Personal Computer

The Personal Computer of the Year was chosen by a distinguished panel of judges selected by Your Computer Magazine. NEC will be happy to provide specific details of the judging criteria.

For more information about the remarkable NEC A.P.C. write to
NEC Information Systems Australia Pty. Ltd. (Inc. N.S.W.).
SYDNEY: 99 Nicholson Street, St. Leonards 2065. Phone (02) 4383544.

MELBOURNE: 11 Queens Road, Melbourne 3004. Phone (03) 267 5599.
BRISBANE: 8 Campbell Street, Bowen Hills 4006. Phone (07) 528544.
PERTH: 67 Adelaide Terrace, Perth 6000. Phone (09) 325 6988.

NEC

NEC Corporation,
Tokyo, Japan

Garland, Farwagi & Shillington NEC1231

Personal Computer Software

16-BIT SOFTWARE AVAILABLE FOR ADVANCED PERSONAL COMPUTER

SOFTWARE

Category A:

Software sold by NECISA as the sole distributor of these packages on NEC personal computers. Full support provided by NECISA.

Category B:

Third party software with which NECISA is familiar and has demonstrated and tested and for which first line support may be obtainable from NECISA, but no warranty is implied. Product is obtainable from author or under certain circumstances, via NECISA.

Category C:

Third party software which is claimed to run on NEC Personal Computer products but which NECISA has not, as yet, fully evaluated.

Operating Systems

CP/M-86 Version 1.1 (A)
MS-DOS Version 2 (A)
P-SYSTEM Version 4 (A)

Languages

Personal Basic (B)
R.M. COBOL (B)
C/BASIC-86 (B)
C.B.-86 (B)
PASCAL MT+/86 (B)
Speed Programming Package for Pascal MT+/86 (B)
CIS/COBOL 86 (C)
DRI C 86 (B)
PL/1-86 (B)
SSS FORTRAN 86 (C)
CONTROL-C BASIC (C)
SUPER SOFT C 86 (C)
PASCAL/M 86 (C)
JANUS/ADA 86 (B)
Computer Innovations C 86 (B)
MS-BASIC (B)
MS-BASIC COMPILER (B)
MS-BUSINESS BASIC COMPILER (B)
MS-PASCAL (B)
MS-FORTRAN (B)
MS-C (B)

Telecommunications

I.E. Asynch-86 (A)
I.E. Bisync - 80/3780 (A)
I.E. Bisync - 80/3270 (A)
MODEM 86 (B)

Word Processing

Benchmark Word Processor (A)
Benchmark Telecommunicator (A)
Benchmark Mail List Manager (A)
Wordstar-86 (B)
Mailmerge-86 (B)
Spellstar-86 (B)
Spellbinder-86 (B)
OK Editor (B)

Data Management

dBASE II 86 (A)
Dataflex 86 (C)
Condor 86 (C)

Productivity Tools

Access Manager 86 (B)
Display Manager 86 (B)
Diagnostics/2 86 (B)
Disk Doctor 86 (C)
RASM 86 (B)
Sid 86 (B)
VEDIT 86 (B)
Word Master - 86 (B)

Financial Modelling

Micromodeller (C)
Microplan Spreadsheet (A)
Microplan Business Planner (A)
Microplan Consolidator (A)
Scratchpad 86 (B)
Supercalc 86 (B)
Mars (B)
MS-Multiplan (B)
MS-Multi-Tool Budget (B)
MS-Multi-Tool Financial Statement (B)
Masterplanner (C)

Accounting

IMS (Ascent) & (Executive) (B)
Davidson (B)
I.A.L. (B)
Attache (B)

PHONE TOLL FREE
008 22 6344
(IN SYDNEY PHONE
438 2322)

**FOR MORE INFORMATION ABOUT THE
REMARKABLE NEC A.P.C. AND YOUR
NEAREST DEALER**

NEC

NEC Corporation
Tokyo, Japan

NEC 1135a

RANKED IN THE US TOP 30!
Each product marked with an 'S' is ranked in the
top 30 list of the best IBM PC software rated
monthly by the authoritative US magazine "Softalk".



NEW RELEASES from Sourceware's Software Supermarket

Sourceware is out to prove it has Australia's finest range of exclusive software for the IBM PC user. Here's just some of the top-performing unique software just released from Sourceware. Get the full details from your IBM PC dealer, or ring Sourceware for information or your nearest stockist.

AST RESEARCH INC

AST produce a range of IBM PC addon memory products which recently placed No. 1 in PC WORLD magazine user poll. These multifunction cards have memory from 64-512k as well as clock/calendar, Superdrive and Superspool software and extra serial, parallel and games output ports. AST also market full range of communication products such as IBM SNA, 3780, BSC and System 34, 36, 38 emulation cards as well as PC Net local area network systems.

★ LOTUS 1-2-3

Rated No. 1 on "Softalk's" monthly rating of the best IBM PC software. With 1-2-3, you can be using your IBM PC in a surprisingly short time. Even if you've never been near one before. 1-2-3 instructs you right on the computer's screen in a friendly, helpful way, so you learn as you go along. Everything is in English, not code, so there's no new language to learn. There's even a special HELP key you can press to put special instructions on the screen if you can't remember what to do next. But for all its comforting ease of use, 1-2-3 is one of the most powerful programs available for the personal computer. It combines spreadsheet, information management and graphics all in one.

PLANFIN & PROFIN

The easy to use financial analysis and budget forecasting system written in Australia to our local business specifications. These packages have also received high acceptance in the USA as business planning packages that are easy to understand and extremely valuable in their ability to prepare spreadsheet data for packages such as 1-2-3, Visicalc and Multiplan.

GRAPHIC SOFTWARE SPECIALS

Sourceware carry a full range of business graphics packages for both dot matrix printers and colour plotters.

FASTGRAPHS	general graphics including "Slide Show"
GRAPHWRITER	advanced graphics
PRIME PLOT	CPM graphics for the SWEET-P and Apple
SWEET-PLOT-80	graphics package for OSBORNE, KAYPRO and NEC?

Here's more new releases from Sourceware:

**DEALER
ENQUIRIES
WELCOME**

SOFTWARE

★PC ARCADE	Arcade games
★FRIENDLYWARE	Intro set for new PC users
★TUTORIAL SET	Professor DOS/Instructor Training set
PC DOCUMATES	Keyboard templates for all major packages
EASYWRITER II	Word processing including Easymailer and Easyspeller
★TIM III	Database manager
FAST FACTS	Personal filing and reporting package
PROKEY	Keyboard programming utility
SIDEWAYS	Vertical print utility
APL PLUS*PC	APL programming language for the IBM PC
★CROSSTALK	Communications and terminal emulation program

HARDWARE

IRMA BOARD	IBM 3278, 3279 terminal emulation card
PCI 1051	IBM SYS 34, 36, 38 - PC interface
PCI 1076	IBM SNA/SDLC - PC interface
SWEET-P	12 Colour graphics plotter



SOURCEWARE

4/73 Albert Avenue, Chatswood, NSW 2067. (02) 411 5711

The Source of Software

S07.FPC

© All product names listed are registered trade marks of the original vendors

special

22

Club File

Our long-awaited comprehensive list of user groups throughout Australia.

24

Comdex — Mammoth Computer Exhibition

Managing Editor Matt Whelan reports on the huge Comdex computer exhibition in Las Vegas. He came back convinced it was a special form of sore-footed torture devised for computer wizards, but managed to bring us some interesting reports on developments in the industry too.

51

Pocket Programs

Another sixteen-page liftout special full of readers' programs.

news

9

Your Computer News

All that's new, innovative, inventive and imminent, in all areas of the microcomputer industry.

feature

48

Have Computer, Will Travel

Some computer companies will go to any lengths to prove the reliability of their products. Shan-

non Robertson of Queensland even sent one of theirs on the back of a truck right through the centre of Queensland to Longreach...

69

Disassembler For The Microbee

Mytek Computers has released a disassembler for the Microbee called BEEZ80. Mike Newnham reviewed it for us.

72

System Expansion Part II

This issue Roy Hill ponders the dreaded S100 bus, and talks of different ways of expanding the memory of your computer.

review

33

Meet The Hyperion

Having spent a freezing winter in Toronto, Les Bell has a soft spot for things Canadian. So he was particularly pleased to review the Bytec Hyperion, a Canadian-made IBM-PC clone.

39

MP/M II On The CDS 2020

The CDS 2020 is a robust multi-user computer manufactured by Creswick Data Systems. It even restored Les Bell's faith in MP/M!

44

Oric-1

The Oric-1 is one of the fast-growing breed of small, largely games-oriented home com-

puters. Evan McHugh gave it the once-over for *Your Computer*.

84

Monitors

— Amber Or Green?

Amber monitors are just starting to take the market by storm as people realise how much easier on the eyes they are than the traditional green-on-black. Jane Mackenzie tried out an amber monitor distributed by Roland, the Amdek 300A.

for beginners

78

Getting dBest From dBase Part V

This month Les Bell continues his dBase tutorial with a look at the various parameters which control the operation of this database system.

department

82, 88

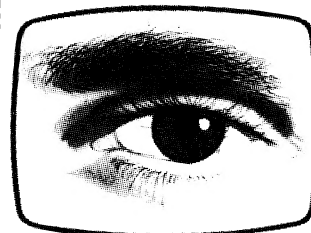
Textfile

Your letters to *Your Computer* — let us know what we're doing right (or wrong), ask other readers for help, air your pet whinge — just write to us.

93-112

Popular Systems

Individual columns devoted to the more popular micros. This month's columns include VIC/64, IBM-PC, CP/M, Hitachi, Microbee, TRS80 and Kaypro.



Matt's Eyevue Of The Show

COMDEX/Fall

This Las Vegas exhibition was spread over five venues, with around 15 km of aisles to tramp down! Our intrepid Managing Editor braved it all (including the Las Vegas lights) to bring us the latest news of the US computer industry.

Bits Missing

Les Bell managed to get his 'dBase' copy to us for this issue, but Christmas still caught him out with his tutorials on assembler and logic. Never fear, they'll be back in February!

110

Classified Ads

Anything you want to buy, sell or swap is here!



editorial

The recent decision by Justice Beaumont in the case *Apple Computer Inc. and Apple Computer Australia Pty Ltd v. Computer Edge Pty Ltd and Michael Suss* has left the personal computer industry in a state of turmoil. Without going into the details, the basic situation is this:

Apple brought suit against Computer Edge, importers of a Taiwanese-made micro called the Wombat, charging that the ROMs in that machine contained copies of two programs written by or for Apple (Applesoft BASIC and the Auto-Start ROM), and that such importation was in contravention of the Copyright Act of 1966. There was also an associated claim under the Trade Practices Act, but the consequences of that charge being dismissed are less significant and I won't discuss them here.

In his judgment, Justice Beaumont reduced the problem to these components:

The key to the problem is the status of the alleged 'works', Applesoft BASIC and the Auto-Start ROM, both in their original form as source code pencilled on paper and in their later form of charge pools in an EPROM, having been placed there with the aid of an assembler program and EPROM programmer, with respect to the protection afforded by the Copyright Act.

The first thing that must be resolved is whether each of these works is a 'literary work' within the meaning of the Act. Then the remaining issues, such as whether Apple is the owner of the copyright, can be successively dealt with.

Justice Beaumont found that computer programs are not literary works within the meaning of the statute, quoting extensive precedents for this view. In particular, he pointed out that when Parliament revised the Copyright Act to cover films and sound recording, it did not include computer programs, although computers were well known at the time. Therefore the copyright claim was dismissed with costs.

This now leaves us in the situation of having no copyright protection for software authors in Australia. The consequences of this decision are not yet clear, but already ripples are spreading on the surface of the pool.

Word reached the US computer industry at the Comdex show in Las Vegas, where a substantial amount of innovative software for personal computers was being displayed. Almost to a man, software developers said that under no circumstances would they allow copies of their software near Australia or an Australian. While this may be a knee-jerk reaction, a real possibility exists that Australian computer users and developers may be denied access to significant software developments. That could cost industry millions of dollars.

Local software authors were still writing code, but were ex-

tremely concerned about the situation and were actively seeking alternative means of protection, such as licence agreements. However, such agreements are of doubtful use, as no contract exists between a supplier and the holder of what would previously have been a pirated piece of software. He did not buy the software, but he did not (necessarily) come by it illegally.

A further difficulty exists for local manufacturers of machines which use US-supplied operating system software. Manufacturing licences for such software usually include a clause requiring the manufacturer to vigorously prosecute any piracy or unlawful copying. But right now there is nothing to prevent anybody copying the operating systems from such machines and selling them, placing the original manufacturer under legal pressure from the US. If I were a US software house, my solution — in the short term, at least — would be to refuse to licence or supply Australian manufacturers. I couldn't afford to place my business at risk.

It is obvious from this that we are very close to reducing the local software and hardware industries to tatters. We are totally dependent on software technology which is now valueless — how can I charge for software when you are legally free to copy it? — and to a considerable extent reliant on software from the US. The average Silicon Valley programmer probably regards us as legal barbarians, and I can't really blame him.

If the Government is really serious about supporting the Information Technology industry (their capitals), then the Attorney-General should move quickly to rectify this situation, either by amending the Copyright Act to cover software, or by the introduction of a special Bill.

While it may be better to have a special Act to cover illegal copying of computer software, it seems intuitively obvious — to someone who has done it — that writing computer software is not that much different from writing poetry. Non-programmers may scoff, but there is considerable art, as well as science, to programming. Until our legislators are sufficiently computer literate to appreciate this point, they may well think in terms of special laws for software, but I suggest that amending the Copyright Act would be a lot faster — an important consideration — and quite appropriate.

Apple may, of course, appeal against Justice Beaumont's decision, and that may give rise to a resolution of the current situation. That possibility notwithstanding, we now know that we need proper legislation to protect the rights of software authors and those to whom they sell their products. Incidentally, isn't it interesting that we naturally refer to programmers as software authors?

— Les Bell

Editor: Jane Mackenzie

Consulting Editor: Les Bell

Assistant Editors: Evan McHugh, Natalie Filatoff

Art Director: Michelle Mabbott

Art Production: Michelle Mabbott

National Advertising Manager: Richard Pakalnis

Victorian Sales Manager: Mel Godfrey

Editorial Secretary: Joy Quinn

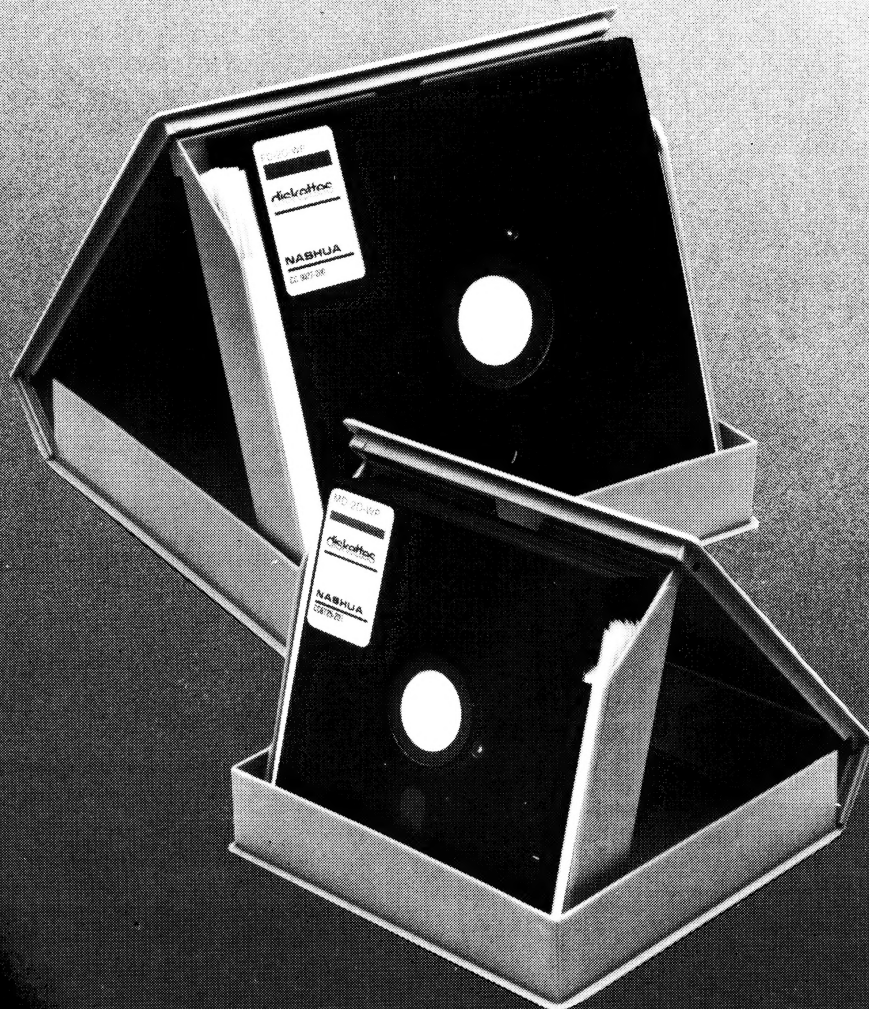
Office Services: Kay Lovell

Managing Editor: Matt Whelan

CONTRIBUTORS: **Australia** — Brendan Akhurst, Shane Anderson, Dr John Barrett, Bill Bolton, Lloyd Borrett, David Brudenall, Geoff Cohen, Andrew Farrell, John Nicholls, Richard Pakalnis, Jim Rennie, Jeff Richards, Bref Ruhl, Peter Sandys, Phil Scott, Rod Stevenson, Greg Stringer, Keith Stewart, Dom Swinkels, Leon Yendor. **New Zealand** — Peter Isaac. **United States** — Daniel Montague, Howard Karten.

YOUR COMPUTER is published monthly by the Federal Publishing Company Pty Ltd. Printed by ESN — The Litho Centre, Waterloo NSW 2017 (phone (02) 662-8888). **OFFICES:** **Editorial and NSW advertising:** 140 Joynton Ave, Waterloo NSW 2017. Phone: (02) 663-9999. Postal address: PO Box 21, Waterloo NSW 2017. Telex: FEDPUB AA74488. **Victorian advertising:** Mel Godfrey, 150 Lonsdale St, Melbourne 3000. Phone: (03) 662-1222. Telex: FEDPUB AA34543. **Queensland advertising:** Geoff Horne Agencies, 16 Bellbowrie Centre, Bellbowrie 4070. Phone: (07) 202-6813. **WA advertising:** Ian Greenacre, Gordon & Gotch Advertising, 134-144 Parry St, Perth 6000. Phone: (09) 328-8044. Telex: AA94436. **SA advertising:** Admedia Group, 24 Kensington Rd, Rose Park 5067. Phone: (08) 332-8144. Telex: AA82182. **Publisher:** Michael Hannan. Typeset by Hughes Phototype, Spit Junction NSW. Phone: (02) 960-2788. Distributed nationally by Gordon & Gotch. Registered for posting as a publication — Publication No. NBP4384. See back page for information on copyright, contributions, reader services and subscriptions. **Source mail:** Les Bell TCY314; Matt Whelan TCY267. **MICC Bulletin Board:** (02) 662-1686 — Les Bell 1085, Matt Whelan 1, or leave a message in comments. *Recommended and maximum price only. ISSN 0725-3931.

"Quality Circle" Diskettes

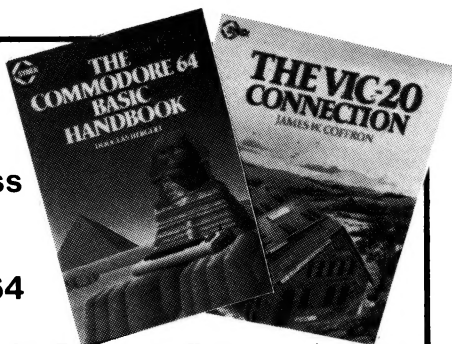


NASHUA

Computer Disc Division

Sydney: (02) 439 5966, Melbourne: (03) 428 0501,
Brisbane: (07) 369 4244, Adelaide: (08) 42 0021,
Perth: (09) 325 5722, Darwin: (089) 81 6204,
Auckland: 33193, Port Moresby: 21 2277

**New Books
from
Sybex &
dilithium Press
for the
VIC-20 &
Commodore 64**



☐ **Your first VIC-20 Program Zaks** \$19.95
Write your first BASIC program in **one hour!**
Easy and entertaining to use for the first-time
computer owner.

☐ **The Easy Guide to Your Commodore 64**
Kascmar \$15.95
Jargon-free explanations of the basics of pro-
gramming, and how to use the various operations
of the Commodore 64 - word processing, maths
calculations, budgeting, filing and more.

☐ **How to Use the Commodore 64** \$7.95
☐ **How to Use the VIC-20 Willis** \$7.95

Here are all the secrets you need to know to
successfully operate your new computer. Each
book introduces the components of your computer,
shows how they work together, and gives you
step-by-step instructions to get it running, handle
problems, and use and modify programs from
books and magazines.

☐ **More Than 32 BASIC Programs for the
Commodore 64** \$29.95

☐ **More Than 32 BASIC Programs for the
VIC-20** \$29.95

Chock full of a variety of interesting programs
that will give you many hours of pleasure. Each
book includes games, graphics, educational and
many other bug-free programs.

☐ **The VIC-20 Connection** Coffron \$15.95
Covers one of the most fascinating facets of
computing — the control of external devices.
Using simple, non-technical terms, Coffron shows
you how to design a computer-controlled burglar
alarm, control lights, electricity and other
devices.

☐ **The Commodore 64 BASIC Handbook**
Hergert \$19.95

An essential dictionary-style handbook providing
clear descriptions and examples of each word in
the Commodore 64 BASIC vocabulary **plus** short
samples to illustrate correct usage **plus** special
notes on subtleties and extra features of your
Commodore 64.

To order, send us your cheque (add P & P \$2.70
Vic; \$4.50 elsewhere) or your Bankcard Number
and Authorizing Signature.

JUST OPENED! Our new **computer information
centre!** We doubt you'll find a wider range of
computer books and magazines in Australia.

technical book & magazine co

289 SWANSTON ST, MELBOURNE 3000

3 YEARS

Three years ago, in November, we
opened Australia's first high street
computer store, and now we're stronger
than ever. During that time we've supplied
hundreds and hundreds of computers and
helped more people than we'd care to
count.

To celebrate, we're having a bonanza
stock clearance on a wide range of Apple
and IBM accessories and software. So
come in for a list and help us celebrate by
picking up a bargain.



**IBM & APPLE
SPECIALISTS**

We are Sydney's Apple and IBM
specialists and have the widest range of
accessories and software, and the
experience to back them up! Whether you
are looking for your first system or you
already have an Apple or IBM, no other
company can offer the depth of
experience that we can.

**CITY
PERSONAL
COMPUTERS**

HEAD OFFICE:
5/385-389 Pacific H'way, Crows Nest, N.S.W. 2065
Phone (02) 922-3600

CITY OFFICE:
75 Castlereagh Street, Sydney, N.S.W. 2000
Phone (02) 233-8992

your computer news



Westpac's 'Handyway' electronic funds transfer system.

More Plastic Money

THE CHIEF EXECUTIVES of Westpac, Woolworths, BP Australia and Food Plus recently announced the creation of Handyway, the world's first nationwide retail electronic funds transfer system.

Handyway will allow customers of these outlets to pay for their purchases with a plastic card. When a customer pays through Handyway the amount of the transaction will be deducted automatically from a cheque or Advantage Saver account and credited to the account of the store or service station.

Westpac will commence installation of the Handyway terminals in approximately 500 Woolworths stores, all Food Plus convenience stores and about 450 BP Service Stations from April, 1984. Sites will be limited to Sydney and Melbourne metropolitan areas initially; however, expansion into other states and country areas is planned to be completed by March, 1985.

Ericsson Australia is designing the terminal to Westpac specifications and it will be manufactured locally at their Broadmeadows factory.

Telecom's new Austpac network will be the vehicle used for connecting the terminals to the Westpac processors.

A spokesman for Woolworths said, "The major benefit to our customers will be the elimination of the need to carry large amounts of cash to do the weekly shopping, and at the same time the ability to draw additional cash from the checkout up to a specified limit." □

Apple Software On Your IBM-PC

ADE HAS been appointed Australian and New Zealand distributor for the range of Quadram products for personal computers. Possibly the most significant product is Quadlink, a new board designed to allow Apple software to be used in the IBM Personal Computer.

Quadlink is claimed to be functionally equivalent to an Apple computer on one board, and once installed in one IBM-PC ex-

pansion slot it can access and execute Apple-compatible software without requiring disks to be converted or reformatted.

Quadlink comes with 64K of memory, a game port (compatible with both Apple and IBM-PC), and a display adaptor offering five display modes, including high-resolution graphics.

Quadram's 'Quadboard' can solve a major problem of many IBM-PC users by taking six PC functions and combining them onto one board requiring just one expansion slot. This leaves four of the five IBM slots open for other expansion.

Quadboard contains an RS232C async communications port, a Centronics parallel printer port, up to 256K of RAM chronograph (clock-calendar), QuadRAM drive (RAM disk) and spooler.

A similar board, the Quadboard II, combines two serial ports, chronograph, memory expansion, RAM disk and spooler. The Quadboards come with one-year warranty.

Another Quadram product, the Microfazer, serves as a buffer to take over a printing task without tying up computer time. It has a full half-megabyte memory, and thus is capable of significantly increasing the productivity and efficiency of microcomputers.

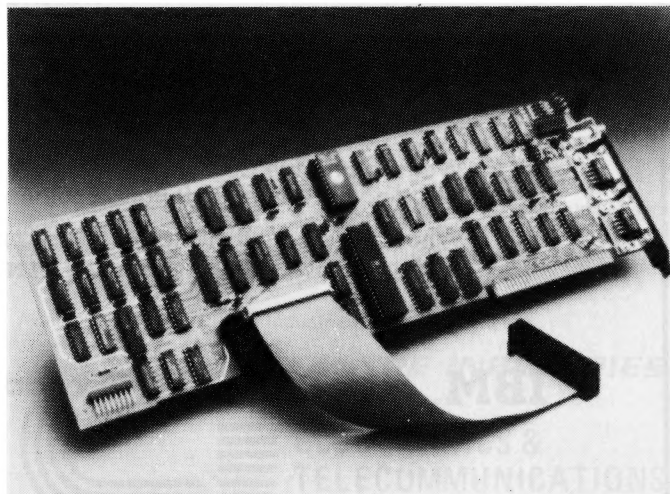
Microfazer is not permanently attached or configured for any specific printer, nor is it dependent on any single computer.

ADE is also convinced that many computer users, especially in business, will soon make the switch to colour monitors, since colour makes the impact of graphics presentations that much more effective.

ADE is therefore offering an Intecolor 2405D single evaluation unit for \$1495 plus tax – one only can be purchased per customer, and the offer is good till January 31, 1984.

The Intecolor 2405D is said to be ideal for business graphics, industrial automation and graphical analysis control, and is an ANSI 3.64 DEC-compatible terminal. Other features include terminal-based vector graphics, thin-line graphics, two pages of display memory, programmable function keys, and a user friendly set-up mode.

For more information on all these products, contact Anderson Digital Equipment, 14 Whiteside Rd (PO Box 422), Clayton 3168. (03) 544-3444. □



The Quadlink board installs in an IBM-PC, giving it the ability to run Apple programs.



The IBM Personal Computer Dealer of the Month Award, won twice in six months by HiSoft.

HiSoft Wins Again

HISOFT, a Melbourne company, has won the IBM Personal Computer Dealer of the Month award for the second time in less than six months. The company also topped the volume list, selling more IBM-PCs in October than any other company in Australia.

The IBM Dealer of the Month award is made to the company which has the largest percentage increase in sales, based on its performance in the previous three months. ☐

Multi, Plus And Integrator

SCA SOFTWARE CORPORATION has released three new software packages. The first is a new version of MultiMate, a program designed to bring a Wang-like dedicated word processor to IBM-PC users. There's a long list of enhancements said to have been incorporated in MultiMate Release 3.20. One of these is Speller, a spell-checker/corrector with a dictionary of some 80,000 words. The new MultiMate costs \$595 (plus sales tax).

WordPlus-PC is another new word processing package, available for the DEC Rainbow, the Texas Instruments Professional computer and the IBM-PC. Said to be one of the most easy to use word processors, WordPlus-PC has a merge capability which allows the user to send personalised standard letters to large numbers of addressees. It also has a complete range of word processing functions and is available with The Boss, an on-line spelling check function containing an electronic dictionary of around 90,000 words. On its own, the WordPlus-PC retails for \$395 (plus sales tax), with The Boss the price is \$525.

The third new package is Data Base Management II, a data base management program designed for inexperienced computer users. For use on the IBM-PC, DBM II is said to be completely compatible with Lotus 1-2-3, MultiPlan, VisiCalc, WordStar, WordPlus-PC and other popular programs. Recommended retail price is \$395 (plus tax).

For further information, contact SCA Software Corporation, 449 Swanston Street, Melbourne 3000. Phone: (03) 347 7011. ☐

② THINK COMPUTERS

Announce the opening of their training and conference facility at:

② THINK COMPUTERS

602 Maroondah Hwy.

Mitcham, Victoria

Ph: (03) 873 1122

Audio/visual equipment and seminar/training facilities are available to individuals, businesses, and schools.

We also provide Consultancy Services, and Complete Computer Systems, including hardware, software, implementation and training.

Whether you are thinking ② THINKING Home, Educational, Business or Networked Systems you should be ② THINKING ② THINK COMPUTERS, the professionals.

IBM

ICL

commodore

COLUMBIA

KAYPRO

Networks—Ethernet, Omninet, Microlan



All functions of the Intellect 100 image processing system are controlled from a simple keypad with clearly annotated keys. The system accepts a range of video inputs and includes recursive video processing facilities to improve on-line images. The hardware comprises a framestore and image processor housed in the plinth beneath the terminal, which contains its own microprocessor. Data can be transferred at 100K per second between the image memory and the microcomputer memory. Two cartridges of 256K capacity each are used for program loading and picture storage.

Sensible Programming Language

THE SENSIBLE SOLUTION is an applications programming language for microcomputers, now available in Australia through Fletcher DP Services.

Manufactured by O'Hanlon Computer Systems, The Sensible Solution is said to solve "the historical problems of writing interactive programs." Its capabilities range from that of application generator through to that of a comprehensive procedural programming language. Features include: Multi-file relational data handling, interactive full screen data entry and updating, multi-index B-tree datafile management, true multi-user facilities with record and file locking, auto code generation, Report Writer and Inquiry Facility.

Fletcher DP Services is using The Sensible Solution to develop new vertical market systems. Current vertical market packages cover radiology, newsagencies, publishing, membership management and inventory control.

The Sensible Solution will run under CP/M, TurboDOS, MSDOS, MP/M, MmmOST and DPC/OS. A minimum of 48K RAM is required along with 300K+ disk capacity. The price of the language is around \$750 (including tax). For further information, contact Fletcher DP Services, First Floor, 320 St Kilda Road, St Kilda 3182. Phone: (03) 537 2811. ☐

NEW MODEL!



THE PRICE/PERFORMANCE WINNER

A graphic for the Cicada 300T Data Modem. It shows a stack of three Cicada 300T units. A cartoon cicada character is standing next to the units, looking at them. The text 'CICADA 300T DATA MODEM WITH INTEGRATED TELEPHONE' is prominently displayed. Below the text, there are several control buttons labeled 'OFF', 'ANSWER', 'ON', 'ORIGIN', 'CARRIER', 'DATA', 'TX', 'DATA', 'PHONE', and 'MODEM'. The model number 'CIC300T01' is visible on the right side of the graphic.

For user installation to a standard phone socket without Telecom assistance, the new Cicada 300T 300-Baud data modem features fully integrated phone for maximum convenience. With all the legendary performance and reliability of the standard Cicada 300:

Or, buy the continuously improved standard Cicada 300 for use with your own telephone. Now operated by hundreds of government, business and private users, the Cicada series modems carry a full, meaningful warranty.

Specifications (Both modems): Compact answer-and-originate units for direct connection to phone lines and for computer interface utilising either RS232C or V24/28 systems. Unit measures 203mm x 152mm x 63.5mm. Telecom approval number C83/37/1011.

Available now from Centre Industries or leading retailers.

The logo for Centre Industries, featuring a stylized 'C' made of horizontal lines. To the right of the logo, the text 'CENTRE INDUSTRIES' is written in a bold, sans-serif font. Below this, the text 'ELECTRONICS & TELECOMMUNICATIONS EXPERTISE' is written in a smaller, bold, sans-serif font.

187 Allambie Road, Allambie Heights, NSW 2100
Telephone (02) 451 5555 After Hours (02) 451 6244
Telex AA 22671



The Roland DXY-101 one-pen plotter (standing), and the DXY-800 eight-pen plotter.

Roland Moves Into Computer Market

THE ROLAND CORPORATION, which claims to hold 70 per cent of the Australian musical synthesiser market, has now set up a computer division, and has entered the market with the release of several monitors and two plotters.

The Amdek 300 and 300A monitors (green and amber screen respectively) are claimed to be compatible with virtually every computer or word processing system, and have a non-glare silk screen that allows strain-free viewing without distracting reflections. The 18 MHz bandwidth and 900-line (centre) resolution ensure that the image is clear and stable, with a 210 by 158 mm display screen.

The Amdek monitors come with a one-year warranty on parts and labour, and have a recommended retail price of \$325.

Roland will also be marketing the Roland DG MB-122G and 122A monitors, which are fully compatible with the IBM-PC, and two colour monitors with either RGB system or composite video display.

The plotters being marketed are the eight-pen, multi-colour DXY-800 model and the DXY-101 single-pen version. They have both RS232C serial and parallel interfaces built in, and can accept serial input at eight different baud rates, which makes them compatible with virtually any personal computer, according to Roland.

Designed for A3 format, the plotters can operate in a flat or standing position, and can print on matt or gloss papers or on clear film.

The command structure is in BASIC, but the plotters will also accept ASCII code. Arcs, circles and alphanumeric characters are built into ROM, forming part of the command structure and thus removing the need for further programming. Fourteen control commands are included, along with vector commands for plotting and tabulating, drawing continuous lines, dotted lines and co-ordinates.

The plotters also come with Roland's standard one-year warranty, and Roland states that its emphasis is on quality. The company aims to supply the best value for each product in its price range, and to build a long-term relationship with its dealers.

For more information contact Adrian Stephens at Roland, 39 Victoria St, Fitzroy 3065. (03) 417-1800. □

An Adam For The Coleovision

CBS RECENTLY demonstrated an upgrade for the Coleovision that brings it to the standard of a home computer. Called the Adam, it is dependent on the Coleco for operation and comprises a CPU and keyboard, dual cassette drive and letter quality printer. The system should be available in April.

The Adam plugs into any television set through the Coleovision system and has a screen size of 36 characters by 12. Using a Z80 microprocessor, the Adam runs its own version of BASIC, called SmartBASIC. The keyboard is a standard qwerty with six function keys and other special purpose word processing keys.

The system runs games software, a word processing package and supports typing direct to the printer. It is menu driven, with a high level of user friendliness.

The most outstanding feature of the system is the built-in letter-quality printer. This uses a daisywheel, typing bi-directionally at 10 cps. Its only drawback is that it is very noisy.

The word processing package operates through easy to follow menus and includes the ability to create windows in text for graphs. The printer is not able to reproduce graphs, but the computer does support graphics commands and colours.

The Adam system will retail for about \$1000, a price which includes the printer, 64K RAM CPU and dual cassette drive. To this you must add the cost of the Coleovision (around \$249), without which the system will not work.

It is expected that the machine will soon undergo upgrades to permit the use of modems and disk drives for which there are no interfaces at present. □



The new Adam/Coleovision family computer system.

World Modem

DATA SAT will release an enhanced version of its World Modem PSTN1 in the first quarter of 1984.

To be known as the World Modem PSTN-1E, the new modem's features include: two programmable connection modes (CCITT V24 108.1 and 108.2); two connection routines in each mode; five disconnection routines; seven status indicators; four modem standards; automatic answering, utilising existing software; selectable auto or manual connection; and dial pulse and busy tone exclusion routines.

The PSTN-1E was reviewed in *Your Computer*, November 1983. For further information, contact Data Sat, Suite 5, 522-524 Kingsway, Miranda 2208. Phone: (02) 525 6688. □

TI 99/4A BOOK SALE

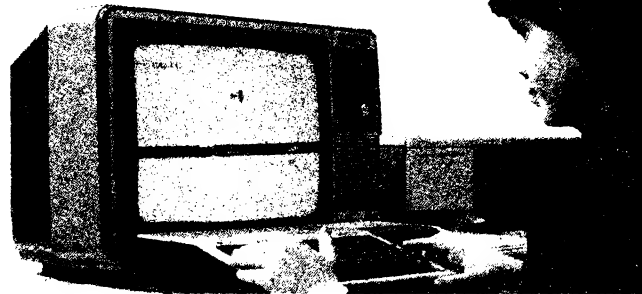
The TI 99/4A computer has been discontinued, so out these books must go!

**AT LEAST
25% OFF**

Available only until sold out.



- S.1 Turner 101 Tips and Tricks for TI 99/4A
Was 17.95 now **12.99**
- S.2 Turner 36 TI 99/4A Programs for Home, School
Was 17.95 now **12.99**
- S.3 Turner TI 99/4A Programming work sheets
Was 9.95 now **6.99**
- S.4 Inman Introduction to TI Basic
Was 20.95 now **13.99**
- S.5 Holtz Using and Programming TI 99/4A
Was 17.95 now **12.99**
- S.6 Holtz TI 99/4A /Game Programs
Was 19.95 now **14.99**
- S.7 Carlson Kids and the TI 99/4A
Was 30.95 now **19.99**
- S.8 Peckham Programming Basic on the TI 99/4
Was 25.95 now **18.99**



BE EARLY!

LIMITED STOCKS!

*INSPECT THESE AT YOUR CLOSEST BRANCH

- TECHNICAL BRANCH 831 GEORGE STREET, SYDNEY PHONE: 211 0561 • 80 BAY STREET, BROADWAY, N.S.W. PHONE: 212 2211 • NSW INSTITUTE OF TECHNOLOGY • NSW UNIVERSITY • SYDNEY UNIVERSITY • ANU CANBERRA
- WOLLONGONG UNI • CANBERRA CAE. • MACQUARIE UNI. RYDE • ARMIDALE UNI (U.N.E.) • NEWCASTLE TECH.
- NEWCASTLE UNI. • RIVERINA CAE. (Wagga Wagga) • MITCHELL CAE. (Bathurst) • GRIFFITH UNI. (Qld.) • GIPPSLAND CAE (Vic.)

AVAILABLE BY MAIL ORDER!

☐ Please send me the following books by return mail

Send to:

UNI Co-op-Mail-Order P.O. Box 54 BROADWAY, NSW. 2007

☐ Place me on your free mailing list for 12 months

NAME

ADDRESS

STATE P/CODE

SIGNATURE

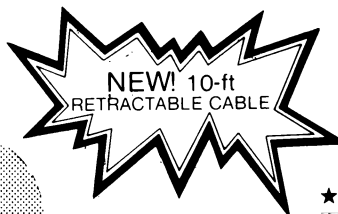
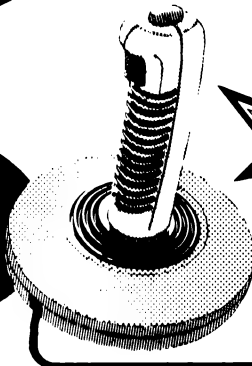
CO-OP MEMBERSHIP NO

\$
\$
Less 5% discount if Co-Op member \$
Add postage: \$2.00 N.S.W. \$2.50 elsewhere. \$
Cheque/Postal Order enclosed \$
or Bankcard No. Expiry

YC 1/84

NEW

\$29.95



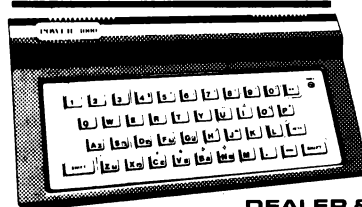
- ★ DOUBLE TRIGGER ACTION
- ★ ARCADE SIZE AND RESPONSE
- ★ SUCTION CUPS
- ★ RIGHT OR LEFT HAND USE

DEALER & DISTRIBUTOR ENQUIRIES WELCOME

NEW



LOWEST PRICED COMPUTER POWER 3000



\$149.95

- ★ 10K EXPANDABLE TO 58K
- ★ FULLY GUARANTEED

DEALER & DISTRIBUTOR ENQUIRIES WELCOME

COMPUTERPLAY P.O. BOX 69, GLEN WAVERLEY, 3150. PHONE: (03) 561 1078. TELEX: AA30625, ATT: ME269.

NAME..... Please send me details..... Champ Joystick ☐ Power 3000 ☐
ADDRESS..... Please let me know my nearest retailer Champ Joystick ☐ Power 3000 ☐
POST CODE..... Please mail me..... Champ Joystick ☐ Power 3000 ☐
PHONE..... Cheque/Money Order enclosed. Add \$2.00 P. & P.

Available Now!

EPSON QX-10

• DUAL 320K DRIVES • DUAL M DRIVES • 192K MEMORY EXPANDABLE TO 256K • GRAPHICS 640 x 400 PIXELS • COLOUR EXPANDABILITY • 5 EXPANSION SLOTS • ENHANCED CP/M 2.2 & M-BASIC SUPPLIED (SUPPORTS FULL GRAPHICS) • LIGHT PEN INPUT • RS-232 COMMUNICATION PORT • 14 USER DEFINABLE KEYS • 16 CHARACTER FONTS • REAL TIME CLOCK & CALENDAR WITH BATTERY BACKUP

COMPLETE PACKAGE INC. 12" ANTI-GLARE GREEN SCREEN MONITOR AND A FX-80 PRINTER

\$4135 plus tax

We will also supply this software FREE
FINAL WORD
SPELL
C COMPILER
Z-80 MACRO ASSEMBLER

C.A.E.

ELECTRONICS PTY LTD
1/27 FORGE STREET BLACKTOWN
NSW 2148

CALL FOR FREE BROCHURES

(02) 671-6951 (02) 621-4242

P.O. BOX 62, BLACKTOWN, 2148.

CALL IN FOR A DEMONSTRATION FINANCE AVAILABLE

your computer news • your computer news



The Fortune 32:16 computer from Datacraft Systems.

Fortunes For Sale

DATA-CRAFT SYSTEMS, a new entry into the office automation market, recently opened its first Australian offices at 59 Burwood Road, Hawthorn, in Melbourne.

Datacraft's main computer product is the Fortune 32:16 computer system. The company describes the Fortune 32:16 as a simple to operate integrated package, whose closest equivalent is perhaps the Wang office system.

The machine uses a 'friendlier' version of the Unix operating system and has a specially designed dual bus structure and memory management unit designed to maximise the performance of Unix software on Super Micro hardware.

Fortune configures the 32:16 as either a professional system with up to three workstations or an extended performance system for up to ten users.

Configurability spans up to one megabyte of main memory, 120 megabytes of hard disk, cartridge tape back-up, IEEE 4888 interfaces and multiple printer interfaces. Each terminal can connect a printer.

System software products available for the Fortune 32:16 include a range of relational database managers and high level languages (C, ANSI COBOL, C BASIC, SMC Business BASIC, FORTRAN 77, Pascal and APL). Proven software also extends to a range of conversion aids and emulators for several popular systems, financial modelling systems, and communications facilities including asynchronous, batch bisynchronous, interactive bisynchronous (3274/5/6 emulation) and networking.

In applications, Datacraft has a range of Australian packages running on the Fortune 32:16, including business accounting modules, production systems, share register and purchase management.

Fortunes to be spent range from under \$12,000 for a basic system up to around \$31,000 for a four-workstation system. □

Think Computers!

?THINK COMPUTERS (we don't know why the question mark's there, but there it is - it's not a typographical error) opened a new demonstration and conference facility in Mitcham, Vic, at the end of November, the official opening being conducted by Ken Barelli, Mayor of Nunawading.

MICROFLEX

PROGRAMS FOR THE MICROBEE

TOUCH TYPING TUTOR: Uses graphics keyboard, over 200 graded exercises. Teaches fingering \$25.00

TEACHER'S MARKBOOK: Stores up to 48 student names, and up to 8 class test results. Gives percentages, Standard Deviations, Means, Standard Scores, prints class report. May be used without a printer. Saves files on cassette. \$45.00

FLEXACCOUNT: Cashbook accounting for small and medium business. Allows up to 30 Analysis columns, up to 60 cheques/deposits per month in 16K, over 300 in 32/64K. Prints two reports for record/tax purposes. \$85.00

ADDRESS FILE: Stores over 80 addresses in 16K, or over 200 in 32/64K. Add, edit, delete, sort and search by any field, print labels. \$45.00

TINYTEXT: Word processing that won't cost an arm or a leg. VERY easy to learn. Editing similar to BASIC editor, complete with GLOBAL REPLACE (like GX/) and CTRL W etc. \$25.00

ADDRESS LABELS: \$2.00 per 100
CASSETTE LABELS: blank, self stick, \$1.50 pack of 10, \$12.50 per 100

Watch this space for new programs to be announced. We have our programmers working FULL TIME to produce good software for small business as well as for home and education. ALL of the above programs allow either serial or parallel printers and can save data at BOTH 300 and 1200 baud. Send your cheque or Money Order for any or all of the above to:

38 NEWCASTLE ST., PERTH
6000 W.A. Phone (09) 328 9762

NOTE: all orders sent
POST FREE.

According to Peter Horsley, ?Think Computers' marketing director, the company has a policy of employing only computer professionals with experience in running their own business, in order to ensure its ability to help to the full business people trying to computerise.

As well as supplying computers to the business community, ?Think Computers will be specialising in networking and communications, and running various seminars at its conference facility.

?Think Computers is located at 602 Maroondah Hwy, Mitcham 3132. (03) 873-1122. ☐

Datec Forecasts Continuing Growth

SHORTAGES OF COMPUTER STAFF are down to about nine per cent, and turnover has slowed from in excess of 20 per cent in 1981-82 to 13 per cent in 1983 – according to the Annual Forecast for Australian Management, presented by managing director of Datec, Harry Douglas.

The Datec Forecast covers nine sections, including a public interest survey on microcomputers. According to the Forecast, the compound growth rate of business microcomputers over the next two years will be 80 per cent, and this segment of the market is buoyant. Hardware growth indicates a rise of 227 per cent in the demand for micros between 1983 and 1985, 40 per cent for minicomputers and 18 per cent for mainframes. Over the next 12 months, uses of micros are expected to be: Calc/spreadsheets, 77 per cent; word processing, 76 per cent; communications, 54 per cent; graphics, 49 per cent; data base management systems, 40 per cent; and other, 23 per cent.

Large organisations with turnovers in excess of \$500 million which already had 70 business micros would increase these in two years to more than 250, and some responses indicated they would have thousands by 1985.

The IBM-PC has been adopted as a de facto standard by 24 per cent of users and an increasing number of users over the next two years would require IBM-PC compatibility as standard.

In other areas the survey said: almost one third of all new systems developed will be handled by packages; information systems managers in Australia are slowly being recognised for their importance in terms of the overall success of a company; information centres are increasingly being designed to give users tools such as fourth generation languages to overcome work backlogs; and the cost of linking equipment is still a major barrier to office automation. ☐

Do-It-Yourself Programming

THE I.M.A. COMPUTER COMPANY has released a program generator, called Codewriter, which allows beginners to learn to design programs with a minimum of instruction.

Said to be compatible with most leading small business computers, Codewriter requires only that you be able to type the information you want on the screen in your own language.

Codewriter guides you step by step and on completion of your design it writes the program, codes and stores it on your disk. The program may then be called up for you to enter data, search randomly or sequentially, and update information. You can also modify the program at any time.

I.M.A. has also released Dietary Planning, Health and Fitness software – software which addresses the relationships between a balanced diet, activity and exercise levels. Dietplan is based on the personal details of individuals and produces significant quantitative information to assist the health care professional in helping people become slim and healthy.

For further information, contact I.M.A. Computers, 296a Canterbury Road, Surrey Hills 3127. Phone: (03) 836 8835. ☐

More Computing per Dollar

Fantastic Offer:

- ☐ 1 x 128 K Personal Computer
(Features 6502, Z80, 40 & 80 column, PAL colour, Separate keyboard, runs most Apple software and CP/M)
- ☐ 2 x 5¼" Floppy disc drives
- ☐ 1 x Disc controller
- ☐ 1 x Green monitor
- ☐ 1 x Dot matrix printer
(80 column, 80 CPS)
- ☐ Free word processing, data base and spreadsheet software

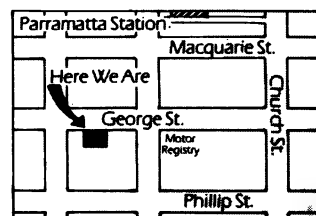
WAS OVER \$4000
NOW ONLY

\$2,500
(While stocks last)



DATA UNIVERSE

2/190 George Street,
Parramatta. N.S.W. 2150
Telephone 689 2599



SOFTWARE



The pick of the crop

... mixed by us, to match your own special need.

- NEC APC
- ICL PC
- Kaypro Portable Computers
- Wavemate Bullet
- S100 Products
- NEC Printers
- Microline Printers
- Nevada
- Micropo
- Ashton-Tate
- Digital Research
- Sorcim
- Microsoft
- + much more

Compotron is now four years old. Our success is such, we are now a separate division of Archive Computer Services, Brisbane. We are still renowned for our technical knowledge and our system building expertise.

Our prices are extremely competitive, and our service second to none. It's your needs we're interested in. Talk them over with us, we want to be involved.

Call us now on: (07) 52 9700
or write to: Free Post 2,
Compotron,
P.O. Box 13,
CLAYFIELD, QLD. 4011.

OR CALL IN AT: 252 Abbotsford Road,
MAYNE, QLD. 4006.

We have the products and the technical skills. We need just one more ingredient to make the selection perfect... your involvement.

Briefly . . . Briefly . . . Briefly . . . Briefly . . . Briefly . . . Briefly . . . Briefly

■ Select MicroSystems, a personal computer dealer for Digital Equipment Corporation in Australia, has announced availability of the Lotus 1-2-3 software package for use on DEC's Rainbow 100 Personal Computer. When used in conjunction with DEC's graphics option, Lotus produces business graphics at a resolution of 800 by 240 pixels. For further information, phone (03) 267 1255.

■ A network of 'talking' word processors being developed by Britain's Open University may soon enable blind people to handle their own correspondence. Letters composed with the equipment appear as either printouts for sighted people or are stored on floppy disks, which are then mailed to other blind users whose talking word processors can read the communication to them.

■ Digital Equipment Corporation has announced the Rainbow 100+, a new computer with an integrated ten megabyte Winchester hard disk, 128K of system memory (expandable to 896K), Z80A and 8088 microprocessors, dual floppy diskette with 800K capacity, built-in terminal emulator and a printer port. A complete Rainbow 100+ system sells for \$9427. Digital has also introduced hard disk upgrade kits for the Rainbow 100 and new versions of MS-DOS and CP/M-86/80. For further information, phone (02) 412 5252.

■ Gareth Powell has announced the launch of the *Australian Apple Review*, a magazine devoted entirely to Apple computers and their uses and users in Australia. Apple Australia supports the magazine, but *Australian Apple Review* takes pains to point out that it is an independent magazine. Many aspects of Apple's operations are questioned and criticised: the first loyalty is to the buyer, not the seller. The magazine will be published bi-monthly until early 1984, when it will become a monthly publication. The cover price is \$3. For further information, phone editor Graeme Philipson on (02) 398 5111.

■ A joint venture has been announced between Sony and

Philips to develop a basic format for compact optical disks which will store from 500 to 1000 times more digital data information – equivalent to approximately 12,000 A4-sized sheets – than present 13 cm magnetic floppies. Based on optical disks designed for music players, the two audio channels would be used for digital data recording and could be plugged into computers. The disks cannot be reprogrammed, but could be used for data filing and long-term storage.

■ Claimed to be the first device of its type available in Australia, the Case 1212 combines error correction, auto answer and auto-dial facilities with a full duplex 1200 bps modem in a compact unit. Compliant with international standard CCITT V22, the 1212 operates either synchronously or asynchronously at 1200 bps full duplex on two wire leased or dial-up circuits. The 1212 is Telecom approved for use on the analogue data service and public switched telephone network, and costs \$1490. For further information, contact David Hoad on (02) 451 6655.

■ Novation, a modem manufacturer, has introduced its PC1200B and packaged it with Crosstalk XVI, from Microstuf, to create a data communications package for the IBM-PC, IBM-XT, Columbia MPC, Columbia Portable, Corona PC, Corona Portable PC and Compaq. The complete system, including modem, software and documentation, carries a suggested price of \$595. While the PC1200B has an extensive set of commands and responses that provide telephone line status, the Crosstalk software employs this smart modem to accomplish auto-dial, auto-log-on and auto-answer, and allows for disk-to-disk transfer of information. For further details, phone US number (213) 996 5060.

■ Insystems of Melbourne has announced the national distribution of Fastbase, a product designed to assist novice users of dBase II to develop screens more quickly and easily. As a user creates a screen, Fastbase will automatically generate the equivalent dBase II command files for file maintenance, record search-

ing, screen input and printing forms. File records can apparently be reorganised, modified or deleted by the user as desired.

■ Every viewdata set has become a potential personal telex transmitter as a result of new development work by British engineers. Britain's viewdata system, known as Prestel, uses an ordinary telephone line to link purpose-made Prestel sets or adapted domestic TV sets to a vast central computer bank of information, ranging from weather forecasts to the latest financial news. Special telex message pages have been added to the service to enable messages to be sent to any telex machine in the UK. British Telecom says there are plans to extend the service to cover Europe and the rest of the world. The most expensive Prestel set with keyboard costs under \$1600 in the UK, while adaptors for domestic television sets can be as little as \$272. A Prestel set can be connected for \$24, compared with \$320 connection charge for a telex terminal.

■ The Apple graphics tablet, an electronic drawing board for creating computer graphics, is now available through authorised dealers for around \$995. The tablet can be used with Apple II, Apple II Plus and Apple IIe computers with 48K or more of internal memory and a floppy disk drive. Users can develop and display block diagrams, architectural designs, logic diagrams, mechanical art, engineering schematics and graphic art, in six different colours. Designs can be saved on diskette and recalled for review or revision. Printing of designs is possible if the graphic software package being used permits it. For further information, phone (02) 888 5888.

■ A disk drive system that will enable Apple II Personal Computers to run software programs based on the widely used MS-DOS operating system was announced recently by Rana systems and Apple Computer. The Rana 80862/2 is a plug-compatible co-processor and dual disk drive system for Apple II computers. It uses an 8086 microprocessor, with a double-sided drive providing 360K of storage per drive. The co-processor portion will provide 256K of main memory, ex-

pandable to 512K. The system will be available by March 1984.

■ Following an exchange of contracts between the two companies, Datronics has assumed responsibility for the provision of service to all Anderson Digital Equipment customers in Australia. These responsibilities include remedial and preventive maintenance services for products supplied by Anderson Digital Equipment, the stocking of spare parts and the employment, training and support of current Anderson Digital Equipment engineering personnel. For further information, phone (02) 887 9333.

■ Nippon Data General has developed an office system using the company's minicomputers and personal computers, linked by optic fibre, for integrated compilation, storage and transmission of documentation generated in an office. A special feature of the 'CEO' is its ability to handle six languages; Japanese, English, French, German, Italian and Spanish. A wide range of DG computers is suitable for use in the system, from the Eclipse MV/10000 32-bit super-minicomputer to the Desktop Generation 16-bit personal computer. A total of 100 terminals and 30 printers can be incorporated into the system.

■ Data General recently announced a new multi-workstation microcomputer, the Eclipse C/30 system. Based on the microEclipse semiconductor technology, the Eclipse C/30 system is supported by a choice of AOS, RDOS and MP/AOS. In business environments, users have access to a range of integrated data processing, data communications and CEO office automation functions. The Eclipse C/30 can be used as a stand-alone system or as part of a distributed network with larger 16 or 32-bit systems or IBM mainframes. An Eclipse C/30 with 512K of memory, in an 8-slot chassis, is priced at \$14,200. A C/30, AOS-based system configured with 512K of main memory, a micro BMC, 50M Winchester disk, 15M tape cartridge, a Dasher D410 workstation, cabinet, licence for the AOS operating system and nine software entitlements is priced at approximately \$46,000. For further information, phone (03) 831 3311.



A deaf person communicates using an Acorn microcomputer.

Computers To Help The Handicapped

MAINCOMP, a British computer company, is developing packages specifically to help blind, deaf, dumb and spastic people to work from their own homes.

One system allows deaf and dumb people to make telephone calls. The user types the message into the computer and then dials the telephone number to which the message is to be sent. When the telephone is answered, the encoded message is sent down the line by a synthesised voice. Provided the respondent has a similar system, a reply can be relayed, via the telephone line, to appear on the user's screen.

The picture shows a typical arrangement for a deaf person. The operator can see her voice pattern on the screen as she speaks into the microphone and can adjust sound level accordingly. She can relay her message either by speech or data, by typing on the keyboard. Replies to her telephone calls can be displayed on the screen and on printout and all conversations can be stored on floppy disk for future reference. ☐



New 'Children's Workshop' software and 'kids' controller' from Atari.

Cookie Monster Enters The Computer Age

FUTURETRONICS has launched a series of video games cartridges for the Atari 2600, designed for children between the ages of three and seven.

Intended to help children take a confident first step into the computer age, the software has colourful graphics and was designed in conjunction with a division of the Children's Television Workshop of the USA, the makers of 'Sesame Street'.

The games use Sesame Street characters to encourage children to practise learning skills such as letter matching and problem solving. Each game has multiple skill levels and can be played by one child or more.

The packages include 'Big Bird's Egg Catch', in which a chicken lays eggs in a hayloft and the objective is for Big Bird to catch the eggs as they roll down along maze-like shutters. Big Bird has to be moved right and left, catching the eggs in a basket on his head.

In 'Alpha Beam With Ernie' the object is to pilot a shuttle craft to a re-fuelling zone by loading his rocket with different lettered tanks and making it blast off. The object of 'Cookie Monster Munch' is to pick up cookies in a series of mazes and put them in a cookie jar.

Atari has also released a special children's keyboard with large, clearly marked key-pads. For further information, contact Ron Ward, Futuretronics Australia, 1076 Centre Road, Oakleigh 3167. Phone: (03) 579 2011. ☐

Kids' Computer Workshops

COMPUTER WORKSHOPS will be holding week-long courses for late primary and early highschool students with little or no computer experience at the University of New South Wales in January, 1984. Unfortunately, their press release reached us too late for us to tell you about their plans before the closing date for applications (December 2, 1983).

However, mention was made in the belated release of similar workshops to be held in the May school holidays. Assuming information on that will again miss the appropriate deadline, we're passing on the Computer Workshops' contact number now, so interested parents and students can find out the details themselves. Phone (02) 357 2877 during business hours or George Newhouse on (02) 327 6657 after hours. ☐

ELECTRONIC PROJECTS FOR CARS

another topical book in the ETI Collection of practical project publications. Containing over 20 projects for the electronic hobbyist interested in adding features and facilities to his vehicle, Electronic Projects for Cars covers a whole variety of topics — from test instruments to ignition systems, from monitoring instruments to accessories, plus a whole bunch of ideas for the experimenter. Among the topical projects are: ETI-316 Transistor-Assisted Ignition, ETI-319 Variowiper, ETI-333 Reversing Alarm, ETI-328 LED Oil Temperature Meter, ETI 324 Twin-range LED Tacho, ETI-325 Auto-probe Test Instrument, ETI-575 Portable Fluorescent Light Wand, etc, etc.

All that, and only \$4.95 — It's a steal!

Of your local newsagent or favourite electronics supplier hasn't got a copy, you can obtain one by mail order direct from ETI Book Sales, Federal Publishing, 140 Joynton Ave, Waterloo, NSW 2017 for \$4.95 plus \$1 postage and handling.



The Little Big Board is now available in kit form.

Little Big Board As A Kit

LITTLE BIG BOARD, the Australian-designed single board computer on the STD bus is now available in kit form.

Provided on-board is 64K RAM, a real-time, battery-backed clock and calendar, two RS232 I/O ports, a disk controller for 20 cm or 13 cm disk drives, and 2K EPROM.

The source listings to the CP/M 2.2 Bios and pulsar utilities are provided along with all circuit diagrams. For further information, contact Pulsar Electronics, Lot 2 Melrose Drive, Tullamarine 3043. Phone: (03) 330 2555. ☐

Sharp PC-5000

SHARP HAS launched the PC-5000, a new portable computer which offers full 16-bit operation and large memory, yet is small enough to fit into a briefcase and run for up to nine hours on its built-in batteries.

Externally resembling a small portable typewriter and weighing only 4.5 kilos in its basic form, the PC-5000 has a full-sized keyboard and an eight-line by 80-character display. Towards the rear of the machine, roughly where the platen of a typewriter would be, a printer may be built-in as an option.

Internally, the unit has an 8088 16-bit processor with 128K of RAM (expandable to 256K), 64K of ROM and, under a flip cover just above the keyboard, space is provided for optional 128K bubble memory modules. Two additional ROM modules can be plugged into the base of the machine, giving a total of 192K.

While the PC-5000 is able to run a range of general applications under its industry standard MS-DOS 2.0 operating system, it is expected to be particularly popular with surveyors, geologists, accountants and other professionals who work in the field where a full-sized computer is not available.

For further information, contact John Kouvelis or Tony Prince, Sharp Corporation, PO Box 233, Fairfield 2165. Phone: (02) 728 9111. ☐



CP80 Printer

Incredible new low price at

\$399.00
inc. tax.

CP80 Ribbons **\$12.00** inc. tax. (while stocks last)

• Atari Printer Interface (ATP/1)

This new low cost Interface plugs into joystick Port 3 and allows you to use any printer with a standard centronics interface.

• Atari Modem Interface (ATM/1)

This new Interface plugs directly into joystick Port 4 and provides you with standard RS232 output. You can then use any off the shelf Modem also Printers that require RS232 Input.

• Atari Eprom Burner (ATE/1)

This new unit allows you to burn 2K, 4K, 8K, Eprom's. Now you can burn all your favourite Programs into Eprom's.

*Eprom Cartridge Boards (4K, 8K, 16K)

\$95.00 inc. tax.

\$75.00 inc. tax.

\$165.00 inc. tax.

\$15.00 inc. tax.

All of the products above are Australian designed and Produced, and come with a 12 month Warranty.

• Apple Centronics Printer Interface	\$95.00 inc. tax.
• Microbee Printer Interface	\$45.00 inc. tax.
• Spectravideo Printer Cable	\$35.00 inc. tax.
• BBC Micro Printer Cable	\$40.00 inc. tax.
• Box of 9 1/4" x 11" Paper (2000 sheets)	\$29.00 inc. tax.

(All Products Available while stocks last)

Dealer Enquiries For The Above Atari Products Are Welcomed.

Compsoft Manufacturing Pty. Ltd.

2 Wiltshire St. Richmond, Victoria, 3121
Phone: 429 9779, 429 4952

Compsoft Microcomputer Services Pty. Ltd.

233-235 Swan St. Richmond 3121.
Victoria. Phone: 429 9686, 428 5269



Apple II*



Vic 20**



Commodore 64**

Now you can play the smash Atari® arcade hits on your Apple II*, Vic 20** or Commodore 64**

The graphics are great, the gameplay is fantastic! Atari arcade hits are so popular everyone wants to play them at home. And now you can! Atarisoft™ brings the Atari arcade hits into your home by developing programmes for Apple II*, Vic 20** and Commodore 64**. And there are Atarisoft™ arcade hits on the way for Texas Instruments

TI 99/4A+ and the IBM PC#. Just look for these smash hits – Centipede™, Pac-Man¹, Donkey Kong², StarGate³, Defender⁴, Robotron⁵, Dig Dug⁶, and other Atari arcade hits in the colour coded pack for your computer.

ATARISOFT™

See the new Atarisoft™ arcade hits for your favourite computer at leading computer software stockists now.



Atarisoft is distributed by Futuretronics Australia Pty. Ltd., 1076 Centre Road, South Oakleigh 3167.

® and TM are trademarks of Atari Inc., or Futuretronics Australia Pty. Ltd. 1 PAC-MAN is a trademark of Bally Midway Mfg. Co. 2 DONKEY KONG, Mario and NINTENDO are trademarks of Nintendo. 3 STARGATE is a trademark of Williams Electronics Inc. 4 DEFENDER is a trademark of Williams Electronics Inc. 5 ROBOTRON 2084 is a trademark and copyright of Williams Electronics Inc. 6 DIG DUG is a trademark of Namco Ltd. Note: Not all products may be available at time of printing. *Apple is a trademark of Apple Computers, Inc. **Commodore 64 and Vic 20 are trademarks of Commodore Electronics Ltd. + TI 99/4A are trademarks of Texas Instruments. # IBM PC is a trademark of IBM, Inc.

New Sirius, Victor Releases

BARSON HAS announced new releases to support the Sirius systems range.

Vicki is a 16-bit transportable computer compatible with the Sirius 1 range. With an 8086 CPU, twin disk drives, 2.4 MByte storage, 256K of internal memory and an in-built 9" (23 cm) screen, Vicki offers power and portability. It is designed as an addition to the Victor 9000, not a replacement. No Australian price has yet been set, but Vicki markets for about \$A6000 in Germany.

The Victor Plus PC allows the Victor 9000 series to read IBM-PC and IBM PC-XT diskettes and run PC and XT software; diskettes can also be reformatted to the Victor high-density formats.

The high-resolution graphics offered can display twice the PC's resolution, and the screen-updating technique of Victor systems allows screen-intensive application software for the PC to run faster. The Victor 9000 can select up to 2000 individual characters, as opposed to the PC's 256. It can display colour information in monochrome shades and colour text in alternative character fonts, reproducible on a compatible printer. The Victor Plus PC has a recommended price of \$995.

A colour option is available for the Victor 9000. When this is used in conjunction with the Victor Plus PC and a colour video display, the Victor 9000 can run IBM-PC colour application software without modification. This unit has a list price of \$295.

Victor has also released the 3276 SNA/SLDC and 3278 COAX Emulation Packages. The 3276 SNA/SLDC enables the Victor 9000 to communicate with equipment supporting the IBM 3276 integrated control unit/display stations. The Victor 3278 COAX allows the Victor 9000 to communicate with 3278

terminals. The 3276 SNA/SLDC has a recommended price of \$695 while the 3278 COAX with option card and software is priced at \$1195.

'VictorLAN' Local Area Network File Server and NetWorkstation are two new products to support networking. VictorLAN enables all users of the system to access common data files and expensive peripherals such as laser printers and mass storage systems.

The VictorLAN NetWorkstation is based on the Victor 9000 computers. It has 256 Kbytes of RAM and the same high-resolution CRT display and keyboard as the Victor 9000. There are three built-in communication ports, one parallel and two serial.

A maximum of 10 file servers and 54 workstations can be installed in one network using VictorLAN connector modules. Ten file servers provide 100 Mbytes of hard disk storage. VictorLAN's operating system, based on MS-DOS, can accommodate up to 200 users, assigned access to the network according to security limitations and job needs. Users can access up to 15 disk file volumes from any workstation within the network.

All options for the Victor 9000 are available to VictorLAN NetWorkstations or converted Victor 9000 workstations. Available options include additional RAM and a voice input system. Victor can supply daisywheel and dot matrix printers that can be attached to VictorLAN workstations, and communication with mainframe computers by VictorLAN workstations is possible with Victor's Communications Emulator Software Packages. Initial deliveries of VictorLAN were scheduled for the end of 1983.

For more information on Sirius and Victor products, contact Barson Computers, 335 Johnston St, Abbotsford 3067. (03) 419-3033. ☐

C= 64 & VIC-20 COMPUTER CATALOGUE FOR HOME, SCHOOL & BUSINESS



Maxwell Office
Equipment
(VIC) PTY. LTD.
162-164 Nicholson St., Abbotsford, Vic. Telephone: (03) 419 6811

Use the convenient coupon
and send for your FREE catalogue TODAY!

FREE Commodore 64/Vic 20 Catalogues

New from Maxwell. Our 64/Vic 20 Catalogue lists hundreds of items. You will view the widest selection of updated software, books and hardware, add-ons available — get the most from your home computer. The exciting new 28 page Catalogue list: arcade, fantasy and family games; business and educational programs; books for beginners as well as experienced users; hardware, add-ons and other peripherals for use with 64/20 home computer.

New! Write for your's Today!

Complete now for your FREE copy!

**FREE POST NO.7 MAXWELL OFFICE EQUIPMENT
162 NICHOLSON ST. ABBOTSFORD VIC. 3067**

No Postage Stamp required. Free Post means we pay the postage.

Please rush me this exciting New Catalogue

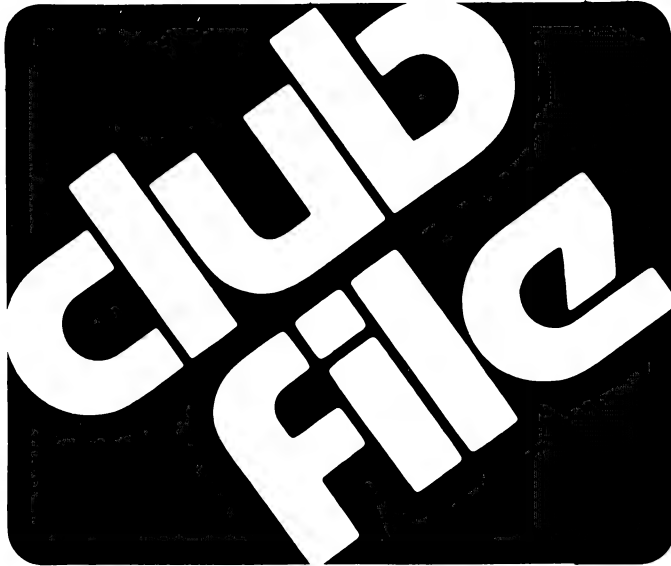
C64 ☐ Vic 20 ☐ — Please tick

Name

Address

P/Code

Maxwell OFFICE EQUIPMENT (VIC) PTY. LTD.
Telephone: 419 6811



Do you sit at home wondering if there's anyone else like you? Do you go off into a small room and do it alone? Did you know there are lots of people doing it with each other? Now you can join them!

With the Your Computer Club File you can find out who else has a computer like yours, or who can give you the good oil on a computer you would like to buy.

This list was as complete as we could make it when we went to press, but if your club isn't on it, write in and let us know the details. We'll publish an updated list in a few months time, so make sure you're in that one — if people don't know you're out there they can't join you!

A.C.T.

ACT Micro 80 Users Group, Bill Cushing, 10 Urambi Village, Kambah, 2902, 062 313630.

ACT Vic 20 Users Association, Chris Groenhout, 25 Kerferd St, Watson, 2602, 062 41 2316, Meetings 1st Monday each month at Boy's Grammar Scout Hall, Red Hill, 7.30 onwards.

ACTARI, Chris McEwan, Co-Ordinator, ACTARI, P.O. Box E112, Canberra, 2600, 062 88 7861.

Apple User Group (ACT), Jeff Brock, 1 Buckley Circuit, KAMBAH, 2902, 062 313630.

Australian ZX80 Users Group (AZUG), David Brudenall, 19 Godfrey Street, Campbell, 2601, for ZX80/Microace owners.

Canberra ACT Sirius User Group, Jim Bland, 062 81 2824, 062 81 2832.

Canberra Compucolor Club (CCC), Meets 7.30 on first Sunday of every month at the offices of Digital Equipment, 28 Lonsdale Street, Braddon ACT.

Canberra Microbee Users Group, Hugh Gibson, Microbee Store, Level 1, Cooleman Court, Weston, 2611, 062 88 6384.

Canberra Microbee Users Group, Adrian Van Wierst, 9 McGowan Street, Dickson, 062 49 7030.

Micsig, Registrar, P.O. Box 446, Canberra, 2601.

Omega, Geoff Cohen, 72 Spoforth Street, Holt, 2651.

N.S.W.

Albury-Wodonga Dist Mbee U.G., Eric Eulenstein, 202 Kooba St, Albury, 2640, 060 25 1601.

Apple Users Group, Colin Rutherford, P.O. Box 505, Bankstown, 2200, 02 520 0926.

Atari Computer Enthusiasts, Gary Francis, 78 Ayres Road, St. Ives, 2075, 2 0933 ext 354, or 789 1379.

Ausbug, Stephen Ford, P.O. Box 62, Londonderry, 2753.

Australasia ZX80 Users Group, Tony Mowbray, 87 Murphys Ave, Kieraville, 2500, 042 28 5296, for ZX80/81 Microace owners.

Australasian ZX80 Users Newsletter, 87 Murphys Ave, Kieraville, 2500.

Blue Mountains Microbee Computer Club, Roger Cooper, 047 58 7238.

Blue Mountains Computer Club, Eric Lindsay or T. Macindoe, C/- P.O. Faulconbridge, 2776.

Central Coast Computer Club, Ron Thornton, P.O. Box 36, Ettalong Beach, 2257, 043 28 2862, 1st and 3rd Tuesday every month at Applied Technology, West Gosford, for all types of computer.

Commodore Users Group, John Guidice, G.P.O. Box 4721, Sydney, 2001.

Compucolor Users Group, David Brown, 91 Regent Street, Chippendale, 2008.

Cumberland Computer User

Group, S. O'Neil, 02 682 3851.
80-AT, The Australian 8080-Z80 Users, P.O. Box 165, Lakemba, 2195.

A.P.F. Users Group, Norm McMahon, 288 Kissing Point Road, TURRAMURRA, 2074, 02 44 2645.

Hawkesbury MicroBee Computer Club, Bruce Rennie, 045 67 7329.

Hunter U. G. - All Microcomputers, Secretary, P.O. Box 39, BROADMEADOW MNSW, 2298, Meets on the second Wednesday of each month in Room 308, building W, University of Newcastle at 7.45pm. Membership is primarily Apple II orientated, but anyone with interest in micros welcome.

Illawarra Microbee Computer Club, Ronald Read, 49 Beatus Street, Unanderra, 2526.

Illawarra Super 80 Users Group, Jim O'Grady, Chairman, P.O. Box 1775, Wollongong, 2500.

Kaypro Users Group, Stephen Foley, 03 857 7236.

MEGS (Microcomputer Enthus. Group), John Whitlock, P.O. Box 3, St Leonards, 2065.

Macarthur Computer Association, R.G. Freind, 109 Campbellfield Ave., Campbelltown, 2560, 046 25 2752.

Mi Computer Club, Norma Jackson, P.O. Box 21, Waterloo, 2017, 02 662 8888.

Newcastle Microcomputer Club, Mr. Gordon Johnson, Electron Microscope unit, University of Newcastle, 049 685045.

N.S.W. 6800 Users Group, 27 Georgina Ave., Keiraville, 2500.

Northern Beaches Vic User Group, E. Tuxford, 161 Barrenjoey Rd., Newport, 2106, Ph 997 2467, Community Centre (If We're lucky).

Northern N.S.W. MICC Chapter, Alen Hartley, Durrabin via Dorrigo, 2433, 066 57 8160.

Northside Microbee Computer Club, Tony Williams, 6 Tunks Street, WAVERTON, 2060, 267 7747 bh, Meets on third Saturday of each month from 1-5pm at McMaho's Point Community Centre. This is at the junction of Lavender St and Blues Point Rd, just short walk from Nth Sydney station.

N.S.W. Peach User Club, Daniel Soussi, 02 698 8286, weekly meetings on Saturday from 2pm at 'Cybernetics Research' 120-122 Lawson St Redfern.

Pocket Computer Users Club, George Antonijevic, 02 683 4296, for those interested in pocket computers, whatever the brand. Meetings held on the first Wednesday of each month at 7.30pm at the 'Woodstock' Com-

munity Centre, Church St. Burwood.

Sorcerer Users Group, Mr. Ian King, P.O. Box 62, St James, 2001.

Sutherland Super 80 Group, Jim Traeger, 02 525 2018, Super 80.

Sydney Forth Group, Peter Tregeagle, 10 Binda Road, Yowie Bay, 2228, 02 524 7490, Forth Computer Language.

Sydney MicroBee Users Club, Tony Wilson, 02 909 3957.

Sydney Peach User Group, Ben Sharif, 261 Northumberland Street, Liverpool, 2170, 02 601 8493.

T.I. Sydney Home Computer U.G., P.O. Box 149, Pennant Hills, 2120.

VIC

Apple Users Society of Melbourne, G. Halprin, 03 859 5835.

AT Microcomputer Club, Grant Forest, 03 8792257ah, 03 699 2888 bh. This club has been formed for people interested in the Applied Technology DGOS Z80.

Atari User Groups Melbourne, Kelvin Eldridge, P.O. Box 173, 3073.

Australian Forth Interest Group, Tony Latermore, P.O. Box 704, SALE, 3850, 051 44 2011.

Australian North Star Users Assoc., P.O. Box 194, WANGARATTA, 3677.

Ballarat Computer Users Group, Publicity Officer: John Preston, 053 31 4363.

BUG 80 (Burwood Users Group), P.O. Box 46, BLACKBURN SOUTH, 3130.

Chip 8, 6800, 1802 User Group, Frank Rees, 27 King Street, BOORT, 3537.

Compucolor Users Group, L Ferguson, 12 Morphet Avenue, ASCOT, 3342.

Forth Interest Group, Lance Collins, P.O. Box 103, CAMBERWELL, 3124, 03 29 2600, Meets on the first Friday of the month.

Geelong Computer Club, Peter McKeon, P.O. Box 93, GEELONG, 3220.

IBM & Columbia Computer Users Club, Giles Bray, 22/11 Auburn Grove, Hawthorn East, 3123, 82 7632, 2nd Tuesday each month, 7.30 at the Victorian College of Pharmacy.

KAOS (Ohio Scientific), David Anear, 49 Millewa Crescent, DALLAS, 3047.

Latrobe Valley Colour Computer U.G., George Francis, 31 Donald Street, Morwell, 3840, 22 1389, for TRS-80 & MC10 users.

Melbourne Atari Computer En-

thusiast, Group is an Atari 400/800 personal computer user group for Australians and New Zealanders. Meetings held on first Sunday of each month at 12pm at 3M Australia Cnr. Blackburn & Ferntree Gully Rd., Melbourne.

Melbourne MicroBee Users Group, 03 741 5534.

Melbourne Super 80 Users Group, Hon. Sec. Victor Shuttleworth, 03 723 2713.

MICOM, Microcomputer Club of Melb., P.O. Box 60, CANTERBURY, 3126.

National Sinclair User Group, P.O. Box 148, GLEN WAVERLEY, 3150.

National ZX80 Users Club, 24 Peel Street, COLLINGWOOD, 3066.

Northn/Westn Sub. Comp. Users Group, John King (Secretary), 284 Union Road, MOONEE PONDS, 3039, 03 338 9304, Contact CP/M Data Systems.

Ohio Superboard Club, 27 McGown Road, MT ELIZA, 3930.

Peninsula Computer Club, George Thompson, 3 Patterson Street, Bonbeach, 3196, 772 2674, 2nd Tuesday each month at Chisholm College, Frankston, many types of computers are catered for.

SMUG, SCORD M100 Users, Robin Miller, 60 Winmalee Drive, GLEN WAVERLEY, 3150.

Sorcerer Computer Users (Australia), Secretary, GPO Box 2402, Melbourne 3001.

The Motorola User Group Soc. (MUGS), Clive Allan, 11 Haros Avenue, NUNAWADING, 3131, 03 878 1298, Group is interested in 6800/02/09 based computers, particularly if running Flex although this is not a prerequisite to join.

Vic. Assoc. of Computer Educators, Arthur Totral, P.O. Box 69, WHITTLESEA, 3757.

Victorian VZ200 User Group, Luigi Chiodo, 24 Don St., Reservoir, 3073, 03 460 3770.

ZX81 Software Exchange, C/- Chips Taens, 5 Muir Street, MT. WAVERLEY, 3149.

QLD

Apple-Q the Brisbane User Group, The Secretary, P.O. Box 721, SOUTH BRISBANE, 4101, Has User Group days every third Sunday of month at Hooper Education Centre, Kuran St. Wavell Heights. Centre is open from 8.30am till 4.30pm, members encouraged to bring Apple along.

Australian Sirius Users Group, P.O. Box 204, CHERMSIDE, 4032, 07 350 2611, Looks after the needs of Sirius One and Vic-

tor 9000 computer users. For membership form write to above address.

Brisbane Super 80 Users Group, Gary Gatfield, 08 355 3173. CBM/VIC Users Group Of N.T., Ian Diss, 089 27 9208.

Brisbane Youth Computer Group, A. Harrison, P.O. Box 396, Sunnybank, 4109.

CBM/VIC Users Group of N.T., Ian Diss, 089 27 9208.

Commodore Computer Users Group QLD, Mrs D D Dillan, P.O. Box 127, STONES CORNER, 4120.

Commodore Users Group, John Egan, P.O. Box 274, SPRINGWOOD, 4127, 07 287 2705, Is for owners of Pet/CBM and Vic-20 machines. Meetings held on the first Tuesday of the month at 130 Petrie Terrace, Brisbane.

Computer Owner's Group, Betty Adcock, 42 Lucan Ave, Aspley, 4034, 263 4268, 2nd Wednesday each month, 7.45 pm, all kinds of computer are catered for.

Gold Coast Microbee User Group, Col McLaren, 1-100 Imperial Parade, Labrador, 4215, 075 314610, meetings first Sunday each month, 3.00 at the Southport High School.

IREE Microcomputer Interest Group, N Wilson, P.O. Box 811, ALBION, 4010.

Mackay Microbee User Group, Geoff Gehring, Box 230, Mackay, 4740, 079 42 3214.

Superboard Users Group, Ed Richardson, 146 York Street, NUNDAH, 4012.

The Microcomputer Society, The Secretary, P.O. Box 580, FORTITUDE VALLEY, 4006, Meetings are held on the second Friday of each month in the Old Town Hall, corner Vulture and Graham Streets, Sth Brisbane. Meetings start at 7.30pm if main gate is closed use the back stairway.

Townsville MicroBee User Group TMUG, Chris Hayes, 077 796065ah, Meets at 7pm on the second Monday of the month. Another 'user' meeting is held later in the month. Meetings are held at Town and Country Computers, CTL Centre, Anne St. Aitkenvale QLD.

TRS80/System 80 Interest Group QLD, 396 2998, Meets on the first Sunday of each month at 21 Rodney St, Lindum, at 2 pm.

ZX 81 Club, P. Carswell, 22 Braud Street, BUNDABERG, 4670.

S.A.

Adelaide Atari Computer Club, Shirley Cornish, 11 Sweetwater Street, Secombe Gardens, 5047,

08 296 6553, 1st Monday each Month at 6 Mosely Street, Glenelg.

Adelaide Micro User Group, R. G. Stevenson, 36 Sturt Street, Adelaide, 5000, for TRS-80 and System 80 Users.

Beebnet, P.O. Box 262, KINGSWOOD, 5062, The group intends to produce a newsletter on a monthly basis. It is interested in any software producers or distributors who would be interested in serving the groups market requirements.

Commodore/Vic Computer Users Assoc., Mr Eddie Hann, 13 Miranda Road, PARALOWIE, 5108, The SA branch meets monthly.

Compucolor-Intecolor User of S.A., P.O. Box 86, Torrensview, 5031, 08 352 3296.

Darwin Microbee Users Group DBUG, Felino Molina, P.O. Box 3111, DARWIN, 5794, 089 82 5613bh, 089 88 1455ah.

Kaypro User Group, Myles Wakeham, 100 Pirie Street, Adelaide, 5000, 08 223 6333, meetings 1st Tuesday each month.

Microbee Users Club of S.A. MUCSA, Ross Savas, 26 Denman Terrace, Lower Mitchum, 08 277 7697.

N.T. 80 Computer User Group, R T O'Brien, 433 McMillans Road, Jingili, Darwin, 5792.

S.A. Commodore Computers U.G., Eddie Hann, The Secretary, P.O. Box 427, North Adelaide, 5006, 258 6367, meetings second Tuesday each month, 7.30 at Royal Caledonian Hall, 379 King William St, Adelaide.

S.A. Hitachi User Group, Cliff Hignett, 45a Ormond Ave, Daw Park, 5041, 08 274 9341.

S.A. Microprocessor Group Inc SAMG, The Secretary, P.O. Box 113, Plymton, 5038, 08 278 7288.

Sorcerer Users Group of S.A., Jeremy Webber, 22 Delange Avenue, BANKSIA PARK, 5019.

South Australian Apple Users Club, The Secretary, SAAUC, C/- The Bookshelf, 169 Pirie Street, Adelaide, 5000.

The Microcomputer Assoc. of the N.T., Andy Smith, Darwin Community College, CASUARINA, 5792.

W.A.

CU WEST WA Compucolor/Intecolor U.G., John Newman, 8 Hillcrest Drive, Darlington, 6070.

OSWEST-Osborne Users Group of W.A., 09 330 3439.

Perth 80 Users Group, C Powell, 09 457 6849, for System 80 and TRS 80 Users.

Perth Hitachi Peach Club, The Secretary, 1 Charf Court, River-ton, 6155, 09 367 5880, for Hitachi Peach & 6809s.

Sorcerer Computer Users of Aust., The Secretary, 90 King George Street, PERTH SOUTH, 6151, 09 367 6351.

Super 80 Users Group Perth, Garry Black, 19 Bendigo Way, CITY BEACH, 6015, 09 385 8813.

The W. A. Atari Computer Club, Mr Alf Gaebier (Secretary), P.O. Box 7169, Cloisters Square, PERTH, 6000.

W.A. Microbee Club, Mike Oborn, 09 447 5366.

Vic-Ups, G. Padfield, 09 451 4629.

W.A. ZX Users Group, Phil Taylor, 09 328 4111, (bh).

WA University Computer Club, 2nd Floor, University of WA, Guild Building, 09 386 1455.

TAS

Devonport Computer Interest Group, John Steveson, R.S.D 422, SHEFFIELD TASMANIA, 7306, 004 92 3237.

Spectravideo Computer Users Group, Mr W. P. Deckert, 48 Heather Street, LAUNCESTON, 7250, 44 4836, Membership to the club costs \$15 which entitles members to a newsletter and to discounts in computer equipment. Monthly meetings of the club are held.

TAS-Micro, Peter Deckert, Unit 1/456 West Tamar Road, RIVERSIDE, LAUNCESTON, 7250.

Tasmanian Commodore Users Assoc., Vincent T. Staggard, The Secretary, G.P.O. Box 391D, Hobart, 7000, 002 72 0295, Commodore and others.

Tasmanian OSI User Group, David Tasker, 111 Bass Highway, Westbury, 7303.

N.Z.

1802 Users Group, P.O. Box 6210, AUCKLAND, NEW ZEALAND, For those who own an ETI-660 or a COSMAC VIP, you can contact the 1802 Users Group. Be kind and send them a return addressed envelope and some International Reply Coupon.

Nelson Vic Users Group, Peter Archer, Nelson VIC Users Group, C/o P.O. Box 860, Nelson N.Z., for Vic and Commodore.

Wellington Microcomputer Soc. Inc., Lindsay Williams, 2 Pope Street, PIMMERTON, NEW ZEALAND.

ZX81 Club, R Skelton, C/- Harbourside Orchard, WAIUKU NEW ZEALAND.

COMDEX™/Fall '83—

Your Computer managing editor Matt Whelan spent 'COMDEX Week' in Las Vegas to bring you this report on the world's biggest computer trade show, COMDEX/Fall '83. It ended on December 2 yet, he says, he's still discovering new products and packages released there.

COMDEX is a codename – it represents a new form of torture designed specifically for those in the computer industry. And it's so subtle, people subject themselves to it willingly, in many cases even paying for the 'privilege'.

First, they accept being sentenced to five days in Las Vegas – the place with so many flashing lights that, if they ever synchronised, the rest of the United States would black out; the place that breeds hotels the size of a football field, with the lobby at one end, the lifts to the rooms at the other, and obstacle courses made up of gaming tables and poker machines in between.

Then they discover the 'hard labour' portion of the sentence: trying to see all the exhibits in the five days allowed. It's only the fact that shuttle buses run between the various sites needed to house the mammoth display that helps restrict their week's walk to a mere 14 kilometres of aisles...

Sometimes they decide it's been worth it when they stumble upon 'the perfect product', just what they came looking for! That's the cue for the ultimate torture – the man in the booth quotes a delivery date of August 1984 as he unashamedly asks them to sign a pro-forma 'Letter Of Intent'.

Pain, Or Pleasure?

Both. There are a lot of good things to be said for assembling the US computer industry in one town, especially if you're visiting from overseas and want a concentrated technology diet.

I may have over-emphasised the dark side of COMDEX (however, I *do* have a copy of a letter of intent to purchase a machine slated for August release); I have probably done so to justify the incompleteness of this report.

In an exhibition this big – there were 1400 exhibitors spread over five main sites – you could pick any 10 delegates and get from them at least five quite different views of the show. This report is the view of just one of the 80,000 COMDEX attendees.

The most obvious 'theme' for a visitor used to a wide open market like Australia's was the dominance of the IBM PC. It seemed that almost every new product was IBM-related – if it was hardware it was a PC copy or peripheral, if it was software it was written for PC-DOS first, and other operating systems second (if at all).

Major manufacturers, some dominant in the micro market before IBM even thought about entering it, are releasing compatibles too. Texas Instruments, NorthStar, Televideo, Sanyo and Panasonic were just a few of the new IBM imitators.

IBM itself was a star exhibitor, with the new PCjunior – although its appearance at the show wasn't nearly as interesting as some of the rumours surrounding it. Various industry observers had it that IBM was full of internal grimaces at the too-early release (forced by press speculation) of an incomplete machine; or, more interestingly, that the announcement was a dastardly scheme to ruin everyone else's Christmas sales figures. Those stating the latter opinion said IBM was planning to withdraw the machine from the market in January, before any shipments were made!

Join The Queue

Rumours notwithstanding, there is a long queue forming for the PCjunior (how I hate that name...), even though dealer demo units were only shipped in early December, and customer deliveries won't start until 'first quarter, 1984'.

While you may not be able to buy a machine, you can read about it (I saw the first issue of PCjr magazine at the show!) or start shopping for software for it (Pyramid Data, for example, used the show to announce four packages for the baby IBM).

IBM's display was probably the biggest, and most professional, at the show. It held pride of place in 'The Gold Room', actually a suite of rather large rooms right at the front door of the Las Vegas Convention Centre.

I hear the IBM show staff underwent special training prior to COMDEX, and I can believe it. Each separate display was manned by people who actually knew what was going on in their little corner of the world, and they all knew who to send you to next if you asked a question outside their brief.

Visitors queued for up to an hour to take part in a special hands-on demonstration of the junior, complete with tuto-

rials, audio-visuals, and surprise special-effects. There were also several units in the normal display areas, although the range of software being run seemed limited.

I'm sure, after my very brief look at the junior, that one of the earliest hardware releases for it will be a replacement keyboard. The cordless (infra-red) 'connection' to the processor unit must be an attempt to draw attention away from the fact it has one of those awful 'chiclet' keyboards. The keytops aren't even marked with their respective characters – that's all on the case itself.

Whether I like the look of it or not, you can be sure the junior, like 'daddy', will create an industry of its own (as long as IBM quashes those rumours and actually gets the machine on sale).

Tandy's Big Surprise

Tandy caught most people napping with a mid-show release that provided several surprises in the one package, its new Model 2000.

What was so special about it? First, it *isn't* an IBM workalike, even though it is a 16-bit MS-DOS machine. Tandy has opted for performance, rather than the mediocrity of cloning. It has a true 16-bit data path, and runs an 8MHz Intel 80186 processor.

Tandy claims the Model 2000 is three times faster than the IBM in benchmark comparisons, has four times the disk storage, twice the graphics resolution, and more expansion capability.

Second, it's a Tandy that isn't locked into Tandy-supported software, thanks to its 'industry-standard' MS-DOS operating system.

The company is quick to point out you can have 'the hottest programs on today's market' – starting with dBase II, Multiplan, PFS:File, and a whole lot more soon to come including Microsoft Windows.

Similarly specified, the high-performance Tandy is cheaper than the IBM and most of its imitators. A two-drive (720 kilobytes each), 128 kilobyte machine with serial and parallel ports included sells for \$US2999, while a 10-megabyte hard-disk version with 256 kilobytes internal memory sells for \$US4499.

On The IBMwagon . . .

I could spend the next three pages listing the new compatibles, the updated compatibles, the cheaper compatibles, the better compatibles or the compatible compatibles. I won't.

Mammoth Computer Exhibition

Instead I'll pretend many of the lesser lights in this circus of clones have already had their liquidation, and note just a few of the significant ones...

I do wonder whether IBM designed a portable and just forgot to build it, because everyone is copying it regardless. Most manufacturers in this corner of the market have a Clone-PC, a Clone-XT, and a Carry-Clone – and those who don't have one of each often start with the portable.

Televideo is one manufacturer which used COMDEX to announce its 'get with the strength' policy: it released "an advanced 16-bit personal computer (the TS 1605) which is fully hardware and software compatible with the IBM PC" plus "a hard-disk personal computer and a 16-bit portable, both of which are hardware and software compatible with the IBM Personal Computer and the recently announced Televideo TS 1605".

Texas Instruments announced colour and mono portables that are compatible with the almost-clone TI Professional. One of the impressive things about the Professional is TI's software support effort, and all these packages go straight onto the list for the portables as well.

The Professional now has a 10-mega-byte hard-disk option, and this will be carried over to the portables too.

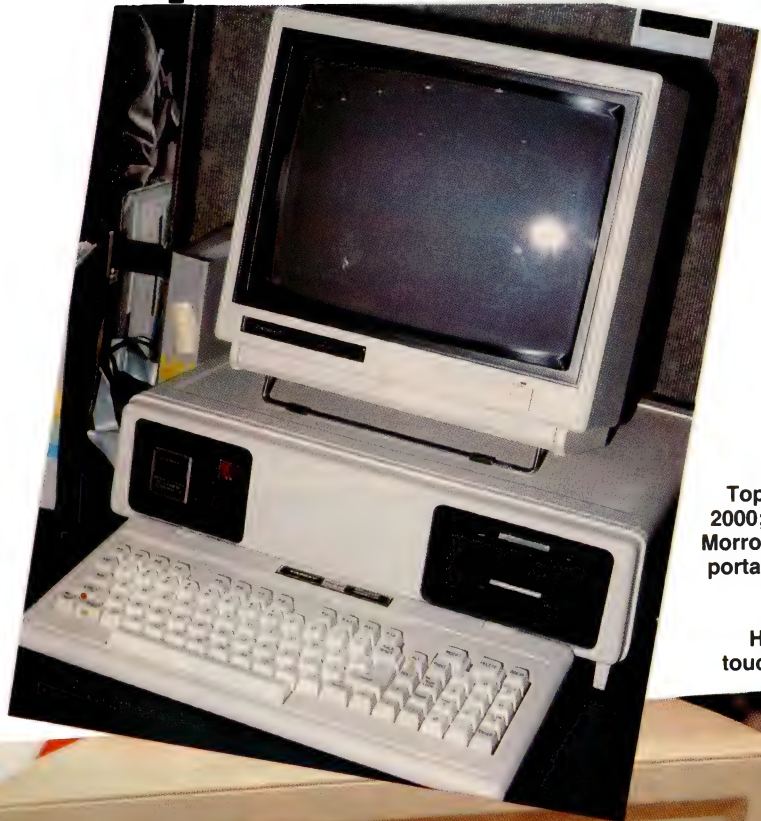
There were a lot more entries in the workalike stakes. Old hand NorthStar showed a fresh approach with 'multi-clone' – a multi-user system where each station behaves like an IBM PC, but shares resources such as disk-drives and printers. It's supposedly software-compatible, but obviously not so in its hardware. Others on show included Columbia, Stearns, Seequa, Corona, Compaq and more...

Other Portables, And Other Things...

I'll never get to tell you about half of what I saw, and I only really absorbed half of the COMDEX mammoth...but here are a few of the things which caught my eye:

There was a lot of action in the portable/transportable field, with a new 16-line display for the Gavilan, three similar flip-top machines all released with the same name (Commuter), a neat Osborne-style portable Micro-Decision from Morrow, and a 16-bit upgrade for the Kaypro II and IV (available for retrofit to earlier models, too).

Kaypro also announced a desktop machine, the Robie, which squeezes 2.6 megabytes onto each of its floppy ▶



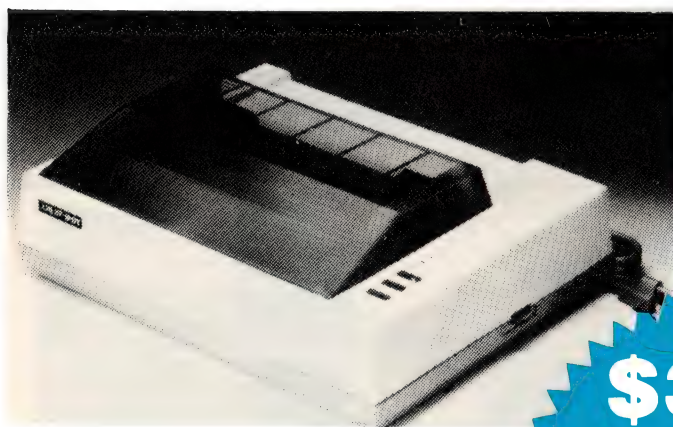
Top — Tandy 2000; centre — Morrow's trans-portable Micro-Decision; bottom — HP150 with touch-screen.



PRINTER PRICE CRASH!

We've done it again! Every time we drop the price on Australia's top-selling printer our sales double! Oh well, here we go again ...

You can now buy the runaway-best-selling **AMUST DT80** printer at incredibly low price:



**6 MTHS
FULL WARRANTY**

\$325 (ex tax)

\$375 (inc tax)

**\$8 COURIER
DELIVERY**

That is so ridiculously cheap I'll repeat it in case you think it's a misprint: **\$325 ex \$375 inc**. The bad news is that you can't buy this printer as cheaply anywhere else. Only Micro-Educational has this low price because only Micro-Educational has the volume. The good news is that we are the biggest printer retailer in Australia so you can buy from us by phone or mail with **CONFIDENCE**. We will give you great products, lowest prices, friendly service, overnight delivery and 10 day money-back and 6 months service warranties. (We have full service facilities).



Hello again,
Welcome to our fifth year. As any of our 6000 customers will tell you we are about selling computer products **CHEAPLY**. We also sell **NEW** products, in many instances products you can't buy elsewhere. Most of our customers buy by phone or Bankcard for next day delivery knowing they can return most products for a money-back refund and that all hardware enjoys a 6 month warranty. If you are tired of the "retail runaround" why not buy by phone or mail. We know computers and we treat you like a "friend-of-the-family". Besides, we're cheaper than anyone else.

George

You can run this printer from virtually all computers and we have cards and cables to connect it to Apple \$110, IBM PC \$40, OSBORNE & TRS-80 \$35, MICROBEE \$45, and ATARI \$95, T1994A \$35, as well as serial cards for other micros.

The printer features superb quality print, EPSON compatibility, friction and tractor, graphics, 80cps etc etc.

This really is an amazing Japanese printer. We are presently selling over 300 units a month and have every intention of quadrupling that figure this quarter. Consequently we have no intention of being undersold. By anyone!

To order your AMUST DT80 just phone me, George Parry, on one of our lines and quote your Bankcard number for next day, delivery, or else send a cheque/money order to the above address. Include \$8 for courier delivery (\$10 outside capital cities). Delivery is by Wards Express Courier. Grab one NOW!



17 PARK ROAD GARDEN SUBURB NSW 2288.
(049) 436805 **(049) 430624**

DISKS



\$29

(EX TAX)

\$32

(INC TAX)

Delivery
1 Box \$2
More than 1 Box \$5
(Courier Del.)

You'd be crazy to pay more!
These are the same disks you are presently paying \$55 for. Exactly the same!
Micro-Educational single-sided double density disks with reinforced hubs in plastic library cases. Manufactured in Australia by Control Data for use in Apple, IBM, Commodore 64 and all popular micros. Take advantage of our massive buying-power discounts:

1 BOX \$32 inc tax/\$29 ex tax
10 Boxes \$290 inc tax/\$260 ex tax
BULK: Take \$2 off per pack.

ATLAS-8 SLIMLINE for APPLE

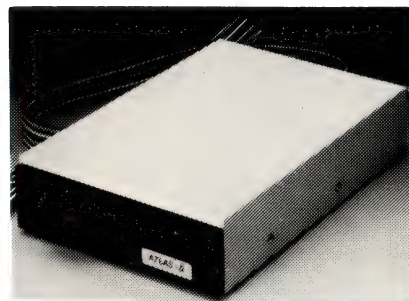
\$325

(ex tax)

\$365

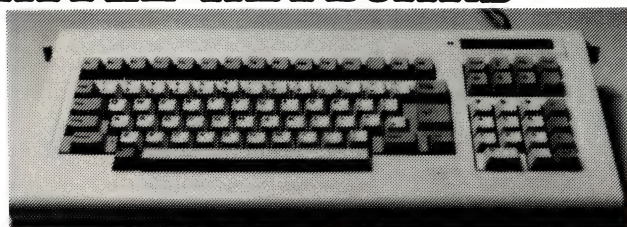
(inc tax)

+ \$5 COURIER



DETACHABLE APPLE KEYBOARD

+ \$5 COURIER



\$225 (ex tax) **\$259** (inc tax)

VISION-80 COLUMN

\$179

(ex tax)

\$199

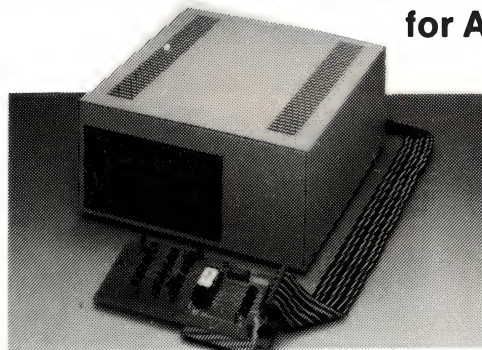
(inc tax)



80 Column Text Card + \$5 COURIER
for Apple II or Ie (please specify)

HARD DISK DRIVE

for Apple



\$P.O.A.

MORE TOP-SELLING PRODUCTS

	(inc tax)		(inc tax)
16K Card for Apple II +	\$90	DT80 RIBBONS	\$12
Z80 Card (Apple)	\$90	ATLAS 8 SLIMLINE	\$365
NEC Green Screen	\$170	VISION 80 128K RAMCARD	\$395
SANYO Green Screen (the Best)	\$275	AUTOMATIC ICE RS-232 MODEM	\$299
MICOM JOYSTICK for Apple	\$45	SPEECH SYNTHESISER	\$75
CHANG-SHING ROBOT ARM for APPLE	\$2295	APPLE MOUSE FUNCTION EXTENDER	\$99



drives, has inbuilt modem and clock, and will retail for around \$US2295. The prototype is not the most attractive machine in town...

Osborne had a stand at Comdex. It was vacant, except for a small sign left by the organisers to say who the space had been reserved for.

Worth mentioning if only because we reviewed its baby brother in the December issue is the "Sweet-P Six-Shooter", a fully automatic, six-pen version of the Sweet-P plotter which will sell for \$US1095.

Australia had a relatively strong contingent at the show, although it was a little off the beaten track at one of the outlying sites (the Sahara Hotel). Nevertheless, in the Press Lounge I heard US magazine journalists discussing an 'impressive portable' – the Dulmont Magnum – and interest in the 11 Australian booths was high.

We were represented by Abraxas Computers of Adelaide (Commodore software), Amust (Melbourne, briefcase machine), Datamax (Sydney, Datamax 8000), Dulmont (Sydney, the Magnum), Eracom (Queensland, Line Encryptor), Flexible Systems (Hobart, robots), Integrity Management Services (Melbourne, business software), Labtam (Melbourne, Labtam 3000), Netcomm (Sydney, comms interfaces), Ran Data (Perth, data security products), and Sybiz Software (Adelaide, 'Big 8' accounting system).

Networking received its fair share of attention, ranging from machine-specific (for example, Kaypro's Kaynet) to wide-open systems using intelligent data-switching boxes to connect widely differing hardware.

Of most interest, to me at least, was Digital Research's announcement of Soft/Net. Claimed to solve the problem of protocol incompatibility in Local Area Networking, it supports file sharing with record and file locking, password protection, resource sharing, electronic mail and print spooling.

It will be available across the CP/M family of 8- and 16-bit operating systems.

Digital Research, like Microsoft and Visicorp, also showed its windows product – a version of Concurrent CP/M which can overlap all four running applications on the screen at once. Updates announced for the next version of Concurrent CP/M were interesting, too – the ability to run MS-DOS programs will be particularly useful.

DRI moved further into the graphics field, too, with the release of DR Draw, DR Access 10, and a PC-DOS version of DR Graph.

'Fourth-generation' languages with powerful database management facili-

ties and, in some cases, artificial intelligence add-ons or applications program generators started to appear in force, although most of them seemed 'not quite finished'.

Touch screens (Hewlett-Packard HP150 and MicroTouch Systems Inc) were impressive, even if research has shown that pointing at a VDU is tiring on the arms. The alternatives – the Mouse, voice input (Texas Instruments), and highly developed electronic writing pad systems were all well-displayed.

Pioneers Still Advancing

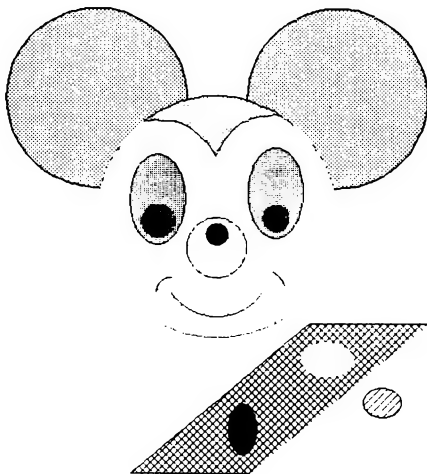
Amidst all the hype and wonder of IBM compatibility, pioneers like Altos, Onyx, Morrow Designs and Compupro are still doing their own thing – and coming up with some exciting new machines because of it.

Compupro released its MP-10, a four-user machine with four Z80s, an 8088, and a megabyte of internal memory. It sells for just \$US4995 in basic form, or \$US8490 with a 40-megabyte hard disk.

Morrow Designs showed some fascinating new machines on its stand. It had hard-disk and 16-bit versions of the popular Micro-Decision, the transportable mentioned earlier, and a low-cost networking system (the 'tower' display on our cover).

If George Morrow was more like some of the other exhibitors, his stand could have been the centre of attention at the show. However, it was only those who attended his after-hours cocktail party who got to see the prototype of a battery-powered portable he'll release next year.

On the opposite page, from top to bottom, are the TI portable computer – being operated by voice input – the Compupro MP-10, and the IBM PCjunior. On this page are, right, the Sweet-P Model 600 six-colour plotter, and, below right, the Televideo TS1605 IBM PC-compatible computer.

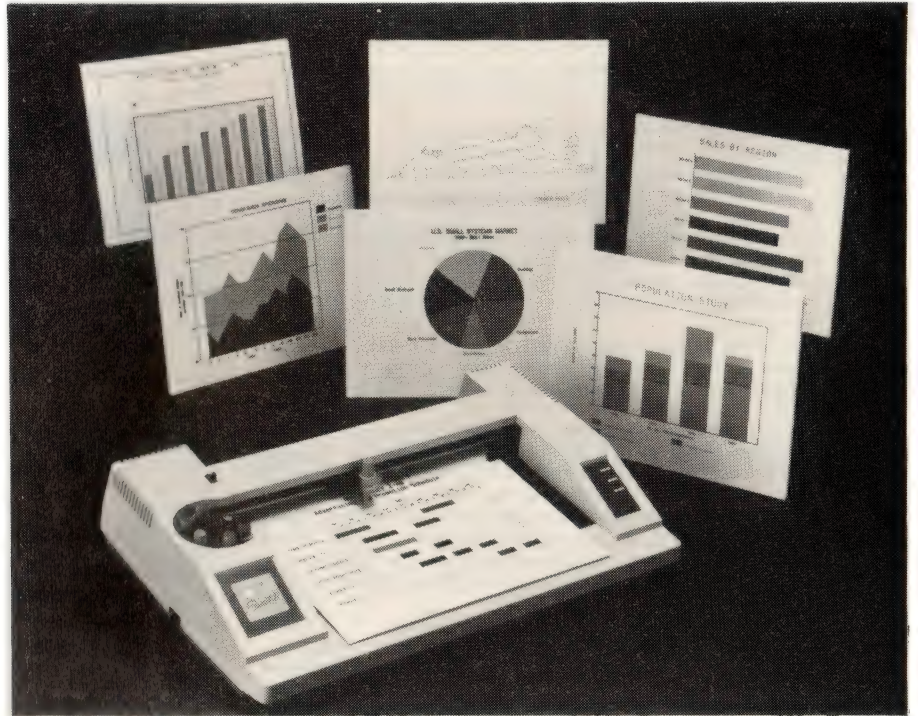


The DR DRAWmouse

The tiny Morrow stands on its end, and a 'proper' keyboard folds down onto the desk for use. It doesn't rely on internal memory for storage, either – in the right side of the machine there is a micro-floppy drive (though there's room for a 13 cm minifloppy if he decides to

go that way). The LCD display is 80 characters by 16 lines, with room for a 24-line display when they become available.

It sports a 16-bit processor, and runs the MS-DOS operating system. Battery life is said to be six hours. □



облу пав
Тжй Нйщ уорк тйм
Тжй шюнк рйд фох чюмпс
The quick red fox jumps over the incredibly lazy
The New York Times
- Tageblatt
at sell

Der B
Deutsche
Αριστο
Στα
Τχε Ακ



NEW BOOKS & SOFTWARE FROM WILEY

available now in our new computer information centre or by mail order

☐ Mastering the VIC 20 Jones et al \$17.85

This excellent new book takes you beyond the VIC 20 manual — to show you BASIC in detail, machine code programming using the VICMON assembler, sound, graphics, and more. Includes lots of quality programs, ready-to-run from the book, or available on disk or cassette.

☐ Mastering the VIC 20: Software Disk \$49.85

☐ Mastering the VIC 20: Software Cassette \$49.85

☐ The Complete FORTH Winfield \$20.85

FORTH is more than just a language — it's an editor, assembler, & disk operating system too... what's more, it's faster and more flexible than BASIC. This book describes the standard dialect of FORTH — and includes numerous examples and complete programs.

☐ Golden Delicious Games for the Apple Computer Franklin \$18.15

Complete, ready-to-use games programs that utilize colour, sound & graphics, games subroutines to be embellished by the clever user, and more. Games also available on disk:

☐ Golden Delicious Games for the Apple: Software 2 disk set \$87.30

☐ Microcomputers A Parents Guide Goldberg \$15.70

Parents who want to take an active part in their children's education must understand how computers operate. Here are the answers to your questions, including a guide to selecting a personal computer and home & educational software, and to exploiting the full potential of micros at home and school.

☐ Fast BASIC Beyond TRS-80 BASIC Gratzner \$26.20

Write faster, more efficient programs — accelerate some functions by as much as 1000 times! This book shows you professional programming tricks using assembly language instructions and short machine language segments mixed with BASIC. Software is available to save you even more time!

☐ Fast BASIC — TRS-80 Model I Disk \$49.85

☐ Fast BASIC — TRS-80 Model III Disk \$49.85

☐ Fast BASIC — TRS-80 Model I or III Cassette \$49.85

☐ BASIC Subroutines for Commodore Computers \$19.20

Here's how to use structured programming to write clear, reliable programs that require less composition time and are easier to modify and debug. Includes over 300 BASIC subroutines to combine and adapt to create a wide range of programs for use on the Commodore 64, VIC 20 or PET.

☐ Build your own Expert System in an Afternoon \$20.85

'There are two major faults possessed by most expert systems: you, personally, don't understand how they work, and you, personally, haven't got one!' writes the author. Both these problems are easily solved by this unique book, that shows you how to build your own working expert system to feed knowledge on anything from horse racing to weather prediction!

ORDER ON THIS FORM NOW!

Photocopy or write out this form if you don't want to cut it out

Please send me the books I've marked ☐ above. I enclose my cheque for \$ _____ (add P & P \$3 Vic & Tas; \$4.50 elsewhere) or please charge my Bankcard No _____ Expiry Date _____ Signature _____

☐ I don't want to buy any books now, but please put me on your computer books mailing list.

Name _____ Address _____

Post Code _____

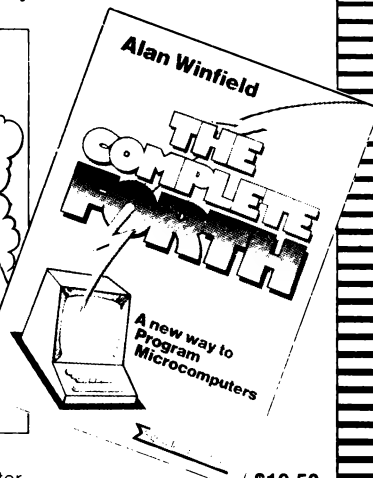
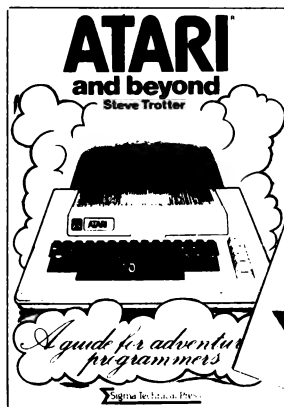
12 83 YC

FIRST IN INFORMATION

JUST OPENED! Our new computer information centre
Come and browse through our wide range of books, magazines & software

technical book & magazine co

289-299 SWANSTON ST MELBOURNE 3000 Ph (03) 663 3951



☐ ATARI and Beyond Trotter \$19.50

This 'Guide for Adventurous Programmers' takes the lid off the ATARI to show you how to extend the already-powerful graphics and sound synthesis capabilities of both the 400 & 800 models.

☐ Computers for Accountants Cowe \$17.85

The benefits & applications of computers for accountants in large or small practices — covering records systems, ledgers, accounts production, word processing, networks, modelling, and more.

☐ Creative Graphics on the BBC Computer Cowrie \$22.50

From the first principles to advanced routines — this book demonstrates the BBC's powerful graphic capabilities. Includes listings for 36 programs that will run on the Model A or B.

Current Bestsellers

☐ The Sinclair Spectrum in Focus Harrison \$18.75

Teaches ZX Spectrum BASIC and includes over 50 programs — from 'Alphabet Sorting' to 'Destination Jupiter'.

☐ Practical Programs for the BBC Computer & Acorn Atom Johnson-Davies \$17.85

All sorts of useful programs — all explained in great detail so that you'll understand exactly how they work. Included are: graphics, games, language manipulation, maths, and more.

☐ Z80 Instant Programs 2nd Ed Hopton \$22.50

Machine code routines to enter directly into your Z80 system without the need for expensive additional memories or a special compiler. All programs (which include delays, music, graphical displays and an interesting game to play against your machine) use less than 1000 steps.

☐ Using CP/M A Self-Teaching Guide Fernandez \$26.20

A detailed self-paced intro to CP/M — for use on any hardware that supports the CP/M operating system.



If you're about to buy a micro-computer, don't talk to somebody who's bought one...

Sometimes the best advice can be the worst kind, particularly when it's the basis of a major business decision, like the purchase of a new computer system. Talking to one company, one man or one user may fill you with information that can have its short-comings.

To get all the info, all the best unbiased advice you should seek out someone who knows all the systems.

...talk to somebody who's bought hundreds.

Someone like Harry Henderson.

Harry Henderson can tell you everything there is to know about micro-computers. He sells every one he buys. As Manager of the Myer Computer and Business Centres, Harry buys millions of dollars worth of all kinds each year.

And what does he look for in a computer system? Basically Harry has a set of criteria that determines all his (and most often his customer's) requirements. They are 1: Easy to buy. 2: Well priced. 3: Adequately supported by software. 4: Well supported by the manufacturer. 5: Technically sound and innovative. 6: They are designed to meet a need. So if you're talking about investing in a micro-computer you'll now understand why you should be talking to Harry Henderson.

Harry knows his Apples!

Apple IIe Business Solution:

The ever reliable pioneer of the micro-computer era has always had one major problem. The fact that it has been over priced. Myer has put together three packages that have overcome this.

The Business Starter System:

Apple IIe, 2 Disk Drives, 80 Column Adapter, Monitor II and a Printer Interface for just **\$2,595**. With business software, Business Graphics, Visicalc, Quickfile, Apple Writer II for just **\$3,495**. And with the PX80 Printer for just **\$3,995**. This incredibly priced system will save you over \$1,600. This offer extends until Christmas.

And his NEC's, IBM's and ICL's like the ABC!

The NEC Advanced Personal Computer with Free D Base II Program:

This is an excellent computer. It represents the latest in computer technology and high value disk storage. The HO2 computer represents the complete computer system with 128Kb of memory and 2 million bytes of disk storage. Priced at \$4,914 it is an excellent system, let alone the free Database (D Base II) program Myer is now offering with each NEC APC computer.

It is no wonder this computer received Your Computer's Personal Computer of the Year Award.

The NEC PC 8201 Hand Held Computer:

This is a complete and portable computer. When we first saw this at NEC it had two problems - no software and an average price. Myer fixed this by putting over 40 programs together and pricing it at \$995. This is hundreds of dollars below its nearest competitor making it a must for every business person.

The IBM Personal Computer:

The computer that put respect into the personal computer market speaks for itself. Myer boast the largest range of options in both hardware and software for this incredible machine. When looking for any computer, it is essential that you look at the IBM Personal Computer.

ICL's Networking Capability:

ICL is the newest addition to Myer's range. When you have a need for a multi-terminal computer, we believe that the technology and support from ICL is ideal.

Extensive Range of Programs:

To enhance your computer you must have access to programs. Myer has chosen wisely, and resultantly a large choice is yours. Ask any of our consultants to explain the features and benefits of the software to you.

And It Is Not Just Computers:

The Computer and Business Centre not only sells computers. It offers an entire range of office automation equipment, facsimile machines, typewriters, telephones, calculators, dictaphones and pocket pagers.

Harry also knows how to please Accountants.

When it comes to the bottom line Harry realises that no company wants to pay top dollar. That's why Computer and Business Centres make it easy for you to purchase your new Business System. With Credit terms, leasing, hire purchase (not available in Sth. Aust.) Credit Cards and trading accounts.

... there's really no sound financial reason for any accountant to balk at the proposition. Plus of course, there's the Myer installation pack which offers installations, training and other on-going discounts. So when it comes to buying a micro-computer we believe we have everything you need . . . including good unbiased advice.

COMPUTER AND BUSINESS CENTRE

MYER

GRACE BROS

ADELAIDE

Computer and Business Centre.
Rundle Mall.
Adelaide 5000
John Grogan (08)2170123

BRISBANE

Computer and Business Centre.
318 Moggi Road.
Indooroopilly 4068
Brian Maddern (07)3785111

MELBOURNE

Computer and Business Centre.
275 Lonsdale Street.
Melbourne 3000
Dirk van der Gaag (03)6613050

PERTH

Computer and Business Centre.
246 Murray Street.
Perth 6000
Chris Ornstein (09)3210151

PARRAMATTA

Grace Bros. Business Centre.
PO Box 10.
Parramatta NSW
Geoff Darnell (02)635 0366

SYDNEY

Grace Bros. Business Centre.
City Store, 436 George Street.
Sydney NSW
Phil Dowling (02)238 9111

The three most common mistakes you can make when choosing a microcomputer.

The first one is fundamental, but it is ignored by most people who buy a name and not a range of functions. There are, in fact, very few bad computers around but that doesn't mean that all computers are born equal. Choose one that best suits your needs.



Next, take the trouble to check speed and functions. Few people do. They simply take it for granted that all microcomputers are the same in performance. For instance, the most important aspect of your computer is the size of its memory. The bigger

the memory and the memory potential, the longer it will last. The faster it works the more work gets done.

Thirdly, the real name of the computer game is Software. That is, the programmes you can buy off the shelf to run in your microcomputer.

It is surprising how many hard nosed accountants buy a microcomputer for one or two functions when, with the right Software, it can perform half a dozen or more important office tasks.

WHY TOSHIBA?

Before you make a final decision give us a call at Toshiba. Half an hour of your time could honestly save you a lot of money, a lot of future anxiety and win you a valuable computer partner.

For instance, the new Toshiba T300 works 25% faster than the leading brand, has twice the memory and is less expensive. It also comes with a huge range of software options.

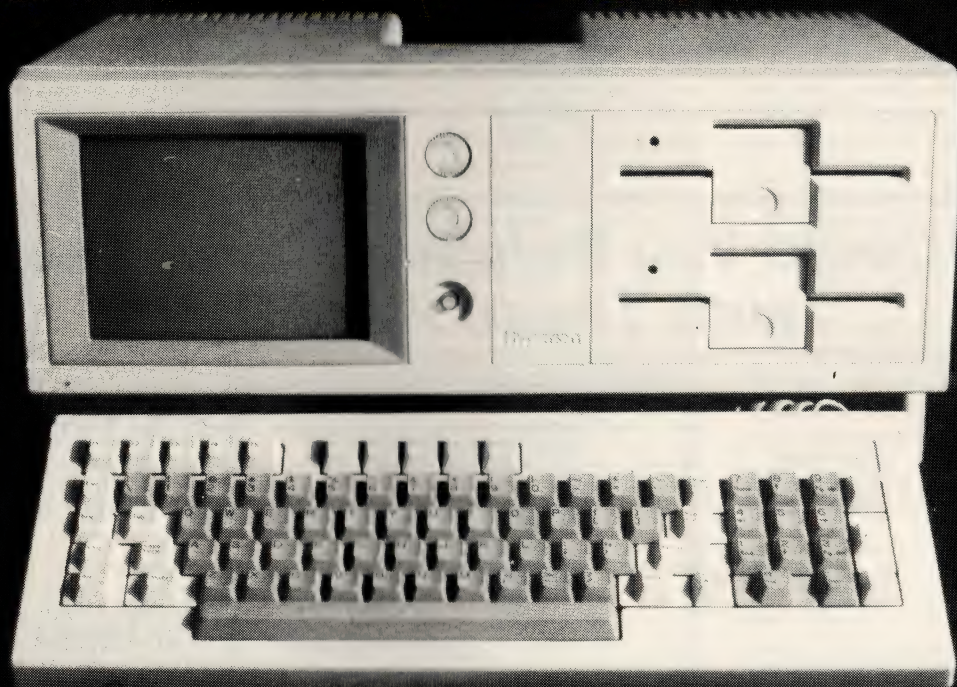


TOSHIBA (Australia) Pty. Limited,
E.O.E. Division,
82-94 Talavera Road,
North Ryde, N.S.W. 2113.
(02) 887 3322.

AGENTS:

N.S.W. Tower Business Equipment (02) 439 1000
QLD. Edgar Vickery & Co. Pty. Ltd. (07) 355 9222
VIC. National Business Systems (03) 529 2155
S.A. General Business Machines (08) 42 0031
W.A. Petelor Business Systems (09) 444 3716
TAS. Advocate Business Machines Burnie (004) 30 1460
CANBERRA ACTCOM Computer Centre (062) 51 4307

Meet The Hyperion™



Having spent a freezing winter in Canada a few years ago, Les Bell has a soft spot for things Canadian. He was particularly pleased, therefore, to review a new Canuck IBM-compatible portable, the Bytec Hyperion Plus.

OTTAWA, THE CAPITAL city of Canada, is rather reminiscent of Canberra. It is not one of the major commercial cities; Toronto and Quebec occupy that position and are similar to Sydney and Melbourne respectively — except, of course, Melbournians don't speak French, nor are they as vocal about secession.

I only spent a short time in Ottawa during my tour of duty in Canada some years ago, and didn't really get to know the place. I do remember it was cold, and I remember staying at the Chateau Laurier, a marvellous old hotel with three-foot-thick walls. I don't remember Ottawa as 'Silicon Valley North'.

Yet that's how it is described by C. Murray Bell, chairman and founder of Dynalogic Info-Tech Corporation, manufacturer of the Hyperion personal computer. Actually Dynalogic has been

swallowed by Bytec Corp in a corporate reshuffling (both are part of Canadian electronics conglomerate Mitel), and now the machine is the Bytec Hyperion.

Incidentally, I seem to recall that IBM, which has an agreement with Mitel on the latter's PABX technology, has bought into Mitel. If that's right, then IBM is part-owner of one of its competitors!

Hyperion, by the way, was one of the Titans of Greek mythology, and was the father of the sun, the moon and the dawn. I doubt, however, that the Hyperion computer will meet with a Titanic fate.

The big growth areas at present are IBM-compatible machines and transportables, and the Hyperion is both of those. It's probably more important to be IBM-compatible, but transportability brings with it the virtues of a compact package, and that's important for any machine that's supposed to fit on the edge of an executive's desk.

The Hyperion package is excellent from the mechanical point of view. It's stylish, slim and sleek, with excellent ergonomic features. For a start, it's compact: 464 mm wide by 288 mm deep and only 223 mm high. That's a low-profile design.

The slimline keyboard slides into a recess under the system box when not in

use, freeing valuable desk space. Above the keyboard, the front of the box has a nine-inch amber screen at the extreme left, and towards the centre of the front panel there's the on/off button (where you can see it and reach it!) and the brightness and contrast controls (likewise). I hate leaning over the tops of machines and fiddling with invisible controls.

Finally, at the right of the fascia are two 13 cm disk drives. These Remex drives have heads which lock apart when no disk is inserted, to avoid damage during transport. The drives are recessed behind the fascia, so that the whole design is well integrated and clean.

The top of the machine incorporates a recessed carrying handle, which is also an ideal place to stuff the power cord when the machine is in its carrying case. This handle is ideal for carrying the machine around the office, although for longer trips the padded carrying case is more suitable.

At the rear are a number of connectors: the mains connector, RS-232C and Centronics parallel interfaces, plus a video output jack and a couple of US telephone connectors. In the US and Canada, the Hyperion can be connected between a telephone and the wall jack; ►



TECH
pty Ltd

Come in to our Showroom and try the Computers for yourself. We don't believe in high pressure sales, so you can relax and inform yourself.

Could You Refuse a Computer With These Facilities?

GRAPHICS

800 x 400 Pixels the highest resolution available of any micro on the market today. To do real graphics in a working environment, this is the only computer capable.

MEMORY

Standard with 128K RAM, upgradeable to 1Mbyte. Includes a massive 80K for graphics.

ERGONOMIC DESIGN

Sculpted keyboard detached from main computer, swivel and tilt of screen. Green phosphor with anti glare filter.

KEYBOARD

Software programmable keyboard. Has function keys for quick operation of dedicated software. Full control of screen brilliance from keyboard.



PRICE

Sirius 1 with 1.2Mbyte drive capacity and 128K RAM is \$5250 plus tax
Sirius 1 with 2.4Mbyte drive capacity and 256K RAM is \$6400 plus tax
Sirius 1 with 10Mbyte hard disk and 256 K RAM is \$9600 plus tax

16 BIT PROCESSOR

Uses the well known Intel 8088 processor with the MSDOS and CP/M86 operating systems. Provides fast processing for number crunching or graphics.

DISK DRIVES

Comes standard with massive 600K per drive, 1.2Mbyte per drive or 10Mbyte hard disk optional. Just compare that storage with our nearest competitor.

SOFTWARE

See below for list of standard packages. There is a vast array of software available for the Sirius. With over 1000 entries in the software catalogue and growing constantly.

SUPPORT

Thousands of units installed in Australia and many more thousands around the world. Maintenance is available throughout Australia.

SOFTWARE

SPELLBINDER WORD PROCESSOR	SUPERCALC	\$150.00	BASIC 86 COMPILER	\$500.00
\$635.00	MULTIPLAN	\$310.00	MS-FORTRAN	\$510.00
SELECT WORD PROCESSOR	MPLOT	\$290.00	MS-PASCAL	\$610.00
\$260.00	DBASE II	\$700.00	MS-COBOL	\$925.00
WORDSTAR	SILICON OFFICE	\$1800.00	GRAPHICS TOOLKIT	\$300.00
WORDSTAR/MAILMERGE	CBASIC 86	\$400.00	AUTOCAD/AUTODIMENSION	\$2800.00
\$725.00				
Errors and Omissions excepted				

Still Not Convinced?

Well what about if we throw in a brand new CP80 printer worth \$500. If you're still doubtful, come in, have a chat, sit down with a Sirius for a few hours and see what it can do.

C-TECH pty. Ltd. 48 A Beckett Street, Melbourne Vic., 3000. . . ph. 347-7917

its internal modem circuitry can be used for data communications as well as for automatic dialling and other communications management functions.

The package is very neat and tidy indeed, and is particularly compact. Perhaps this is part of the appeal of the Hyperion as well as the Osborne, Kaypro and other portables: their compact well-integrated format makes a desk look tidier.

Standard Keyboard

The keyboard is a standard QWERTY type. While it leans towards the IBM organisation, it does not have the curious positioning of the return key and additional keys, sticking instead to the traditional Selectric layout. It has an additional comma key on the numeric pad to meet European requirements, and the softkeys (user-definable keys) are at the top of the keyboard in a row below the screen.

The keyboard has a light touch with a slightly springy feel, which I found slightly odd at first but then got used to. It's a slimline design with two pop-out legs which provide a degree of tilt, but which retract when the keyboard is pushed under the system enclosure.

The internals of the Hyperion are well-designed. The basic objective of the designers was a high degree of IBM compatibility, and this has been achieved. It is possible to boot the Hyperion with an IBM PC-DOS disk, though not all PC-DOS software will work.

However, Bytec produces a monthly list of software which has been tested on the Hyperion, and the latest version of this contains the vast majority of significant packages. The ones which won't run are those which directly address hardware locations, such as the Microsoft Flight Simulator, which directly polls the IBM-PC keyboard.

I've tried a number of different IBM-PC packages on the Hyperion, and they all worked pretty well unless they did some tricky manipulations of disk buffers or other fancy stuff. For example, the FriendlyWare PC Introductory Set managed to drive the sound generator correctly, but left the sound running rather than turning it off at the end of a sound effect.

The Hyperion has two graphics modes: 320 by 250 with a four-level grey scale, and 640 by 250 high-resolution mode. Both of these modes will operate with 200 lines vertical resolution for IBM-PC compatibility. Obviously, the Hyperion does not display colour, as it has an amber screen, but the grey scale display is quite effective.

The processor is an Intel 8088 running at 4.77 MHz, and there is a spare slot beside it for an 8087 processor chip.

Also on the main circuit board, which sits vertically at the rear of the machine, is 256 Kbytes of RAM – enough for most applications short of large spreadsheets. In fact, the operating system allows spare memory to be allocated as a memory disk drive, typically of 120 Kbytes or so.

The serial and parallel ports are a superset of the IBM machine's, but remain compatible – even the pinouts on the connectors are identical. Also on the main board is a battery-backed-up real time clock chip, which supplies date, time and day of the week. The time is continuously displayed at the bottom of the screen, between the two sets of labels for the softkeys.

The disk drives are, of course, IBM double-sided format-compatible. They are quiet and power down when not in use; the only problem with them is that they seem to be rather choosy about the quality of disks used. At first I suspected the alignment on the B: drive of the review machine, but by the end of the review felt it was more likely to be the disks I was using or possibly the disk controller circuit.

Software

The software supplied with the Hyperion leaves little to be desired, covering virtually all the standard applications straightaway. Very few other software packages will be required.

The operating system is Hyperion DOS, aka MS-DOS with a difference: the memory layout of this version is the same as IBM's PC-DOS 1.1. It includes all the usual commands of MS-DOS, such as EDLIN, CHKDSK, DEBUG and others. However, Hyperion has extended it somewhat with the addition of some new commands and features.

The bottom row of the display is devoted to labels for the softkeys. Four lines of softkey labels and functions are available, and each keystroke can either insert text into the command line or shift to another softkey line, changing the functions of the keys.

The default settings of the softkeys are well thought out for the occasional user, giving instant access to the most common commands. Always present is a HELP key, which provides a concise explanation of the functions of the other keys.

One of the other keys, labelled XP-LAIN, runs a program called EXPLAIN.COM, which accesses more detailed help files. Thus one can select XPLAIN FORMAT with two keystrokes (plus return) to get a screenful of assistance on the FORMAT command.

The program KEYEDIT.COM can be used to redefine the keys for other applications. Most of the applications avail-

able on the Hyperion have been customised to make extensive use of the definable keys.

The MODE program has been rewritten by Hyperion to make it easier to use and more versatile. The user can use MODE to set the screen attributes (40 or 80 column, IBM or Hyperion attribute interpretation, memory mapped as colour, mono or either, attribute translation, softkeys displayed at command line, and so on), the printer port, serial port attributes such as baud rate, and the size of the C: memory drive.

The system comes with the Microsoft Macro Assembler, though doubtless few end users will have a use for it.

The primary language for end users is BASICA, otherwise known as Microsoft's GW (Gee Whiz) BASIC. This is the fully featured BASIC that was first revealed to the world in the IBM-PC, but is the logical result of years of writing graphics and sound extensions to BASIC for Japanese companies, not to mention Radio Shack Color BASIC.

It features a wide range of graphics statements such as PSET and PRESET, LINE and DRAW, as well as music and sound statements, plus the ability to access the various ports, respond to softkey interrupts and other extensions that Kemeny and Kurtz never imagined in their wildest dreams.

Word Processing

Perhaps the major application for most users, however, is word processing. Here Bytec supplies its own program, called IN:SCRIBE. The idea is that executives using the Hyperion will not be heavy users of a WP program, and therefore it should be simple to use. To this end, IN:SCRIBE makes heavy use of the softkeys and the other suitably labelled keys on the keyboard.

IN:SCRIBE is an in-memory editor, which makes it particularly suitable for small quick jobs, or for use with a single disk drive version of the Hyperion. It seems to work quite well, and certainly is easy to use; by following the softkey prompts, I managed quite well without looking at the manual.

A typical problem with this kind of machine is that it could be used with any of a number of printers, each requiring different escape sequences to access print enhancements. Bytec gets around this by supplying print filters, which are placed onto the work diskette and patched in via the MODE command to translate escape sequences for the appropriate printer.

The other major application for this type of machine is spreadsheet analysis. Bytec has two major alternatives: MultiPlan and Lotus 1-2-3, both of which have been described previously in these

STAR WORDS



WHICH PRINTER TALKS TO ANY COMPUTER IN THE GALAXY AND COSTS AROUND 30% LESS THAN IT'S COMPETITORS?

Who else but STAR?

Character for character, the new STAR GEMINI family is the best value on the planet. A snappy 120 cps is yours for only \$449* (10 inch paper) or \$795* (15 inch paper).

And the GEMINI speaks all languages, be it Apple, IBM, NEC, T.I., Commodore . . .

Just see your nearest computer retailer for a demonstration of the Gemini's many features — all included as standard. You'll be amazed at our paper feed system that includes friction platen and fully adjustable tractor feed. Or how about the variety of type styles and graphics — printable in the same line?

*Please add sales tax where applicable.



The Printer Range That's Taking The World By Storm

Distributed by:



Case Communication Systems Ltd.

1-3 Rodborough Road
Frenchs Forest NSW 2086

Telephone (02) 452 5231
Telex AA72982

pages. MultiPlan is a particularly nice 'straight' spreadsheet, with strong facilities for consolidation and iterative problem solving.

Lotus 1-2-3 is the software hit of the year, a combined spreadsheet, graphics and database package with very advanced features and the ability to build very large models (with enough memory, of course).

This package is particularly nice on the Hyperion, as the softkeys are dedicated to otherwise tedious functions such as the graph viewing keystroke sequence.

Perhaps the most interesting of the Hyperion software packages is the Aladin relational database. This is a West German product, originally written for the UCSD p-system, but now more widely available.

This advanced database manager can handle up to 256 on-line files, each with up to a million records. It includes particularly advanced statistical and calculator modules, and the ability to work with external software packages such as word processors and spreadsheets. Unfortunately, Aladin arrived just as this article was being completed, so I can't provide a more comprehensive run-down.

Benchmarks

I performed a couple of benchmarks on the Hyperion to test the processor and disk speed. The standard 'Interface Age' prime number benchmark ran in 12 minutes 39 seconds, which is about the same as the IBM-PC. The 'Byte' benchmark, bm9, ran in 1919 seconds, which is slightly faster than the IBM (at 1950 s).

I ran my standard test of writing the word 'TEST' to disk 3000 times, and the Hyperion did it in 27.1 seconds, against 26.95 for the IBM. These results are not significantly different from the IBM, as one would expect from a compatible. Using the memory drive, the time was cut down to 15.6 s.

Documentation

The documentation for the Hyperion is excellent. While it is not up to the IBM standard, it is still very much better than we used to get even a year ago. All manuals are in cloth-covered slip cases similar to the IBM guides, with disks in vinyl pockets at the back.

The User Guide explains the basic principles of operation in a way almost anyone could follow, covering installation, disk formatting, DOS commands and other general topics. The Programmer Guide covers the BASIC interpreter and macro assembler (a bit intimidating for the first-timer).

Also supplied with the basic machine

is the Aladin Guide. This is well organised, with separate tutorial and reference sections. Aladin is not a simple system, but after working through the tutorial section of this manual, the user should be able to cope with most applications.

Also supplied as part of the Hyperion Plus package is the IN:SCRIBE word processor package, and the manual for this is the smallest of those supplied, as befits a software package designed for ease of (occasional) use. Again, the organisation is partly tutorial and partly reference.

The MultiPlan Guide is an edited version of the standard Microsoft document, while the 1-2-3 Guide has been extensively reworked from the original version for the IBM-PC and Compaq.

All the manuals are attractively packaged and presented with the Hyperion name on the spine.

Support

The impression I receive of Bytec Management is that the company intends to stand firmly behind this product. It was among the first manufacturers to offer its own version of Lotus 1-2-3, it has packaged a wide range of alternative software and tested a lot more, and is continuing to support the machine with further enhancements.

I suspect the Hyperion will have a fairly long life, and so it will be supported heavily for a few years to come. The expansion tower will allow significant expansion capability and provide capacity for growth for the foreseeable future.

In addition, Mitel (Bytec's parent) is not exactly a small company. I suspect that with the exception of Northern Telecom, it is Canada's largest electronics company, and its backing will be an important factor in Bytec's success.

Overall Performance And Impressions

The Hyperion performed well in actual use. Firstly, because of its compact packaging, I was able to put it on the corner of my desk and leave it there for a few weeks of occasional use, without it totally dominating the office.

To use it, I simply pulled out the keyboard, flipped its legs out, and booted the system. The 7" (17.8 cm) screen is fine for everyday use, with well-formed characters and a good contrasty display. The amber is quite restful, though strangely I still find black and white best.

The only problem was an occasional refusal by the Hyperion to recognise that a disk was inserted in the drive, and while this could be a problem with the disk controller circuitry, I am more inclined to believe it was the diskettes.

All this persuades me that the Hyperion is a very worthy alternative to the IBM-PC as an executive workstation/personal computer. It seems to offer a high degree of compatibility, and there is no doubt that its styling and design are far superior to the PC, which totally dominates any desk.

Unless PC-DOS compatibility is absolutely required, the Hyperion is well worth a look. ☐

Specifications and Report Card

Unit:	Bytec Hyperion
Made by:	Bytec Corporation, Ottawa, Canada
Processor:	Intel 8088 or equivalent
Clock speed:	4.77 MHz
RAM:	256 Kbytes
ROM:	BIOS, bootstrap and diagnostic only
I/O:	One RS232C serial, one Centronics parallel
Languages:	All the MS-DOS tongues
Keyboard:	84 keys, soft QWERTY, numeric/cursor pad, 10 function keys
Display:	80 by 25 amber screen
Expansion:	Tower cardcase will allow hard disk and IBM-compatible boards
Best points:	Aesthetic appeal, portability, IBM-compatibility
Worst points:	Disk controller very marginal

Ratings:	Excellent	Very good	Good	Poor
Documentation:		•		
Ease of use:		•		
Functionality:	•			
Support:		•		
Value for money:	•			

Extras included:	Lotus 1-2-3
Options:	EX expansion unit
Price:	\$5995 including sales tax for Hyperion Plus package; \$850 inc. tax for 1-2-3
Review unit from:	Hyperion Computer Systems, 8th Floor, 275 Alfred St, North Sydney 2060. (02) 92-0729

You're looking at the only word processor that's as easy to use as SuperWriter™

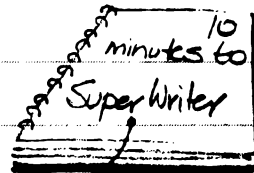
If you're like most people, you don't want to make a career out of word processing. When you have to write a simple letter/memo, all you want to do is roll up your sleeves & get down to business.

And if you're buying a personal computer, now there's a new software package that makes things just that simple.

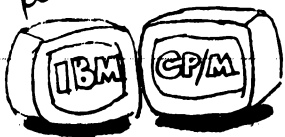
SuperWriter.™

Write your first letter in 10 minutes flat.

With some word processing software, you have to learn dozens of different commands. But with SuperWriter, you only have to remember three keys. And we give you a self-paced starter guide that shows you exactly what to do, step by step.



You never knew your letters could look so good. Works on lots of personal computers



So if doesn't matter if you've never used a computer before. Or if you're only a hunt-and-peck typist. With the SuperWriter word processing program, you can write a perfect business letter the very first time. It's that simple.

Everything you need for only

\$395⁰⁰*

-even a spelling checker.

We're talking about a really complete package here. You get a full function word processor; our 20,000-word SuperSpellGuard™ spelling checker, and a form letter generator. All for \$395. To get all these functions any other way, you might have to spend \$895* or more!

We've built all kinds of professional features into SuperWriter. Like proportional spacing. Bold face highlighting. Memo formatting. And more. So even if you're a complete beginner, you'll wind up with completely professional results.

SuperWriter is available for the IBM/PC and PC XT. Of course it takes advantage of their features. It is also available for CP/M, CP/M-86 and MS/DOS. Which means you can use it for most popular PC's. So drop into your local computer store soon.



If he hasn't got it in stock, give him the pencil, let him write to Arcom Pacific, P.O. Box 13, Clayfield Q 4011. Better still make him call (01) 523862.

**arcom
pacific**

MP/M II On The Creswick Data Systems CDS-2020

Many years ago, Les Bell got involved with installing MP/M 1.0 on an S-100 machine, and vowed never to get involved with MP/M again. However, good reports of MP/M II intrigued him, and he was particularly interested to know that it runs on the Creswick Data Systems CDS-2020.

WHILE THE GLAMOROUS END of the computer business is the personal computers with colour graphics and integrated software packages, like the IBM-PC and others, there's an awful lot of machines out there doing work that doesn't require all those ritzy features, but just solid performance.

For example, the average small business needs accounting, word processing, perhaps a spreadsheet for budgeting, maybe some production planning and control and perhaps some specialised applications. While colour graphics are nice, they are dispensable.

This kind of need can be satisfied by a machine with an external 'dumb' terminal, and given the physical and philosophical separation of the computer and the screen, it then makes sense to make one computer support several screens. After all, the expensive parts of the machine are the power supply and mechanical parts like disk drives and printer, plus the metalwork – adding more memory is cheap, and the processor generally has enough capacity to be shared anyway.

What I am describing is a multi-user system, rather akin to the minicomputers which are currently being replaced by micros. The key to such a system is having enough memory and a fast enough processor in the box, together with an operating system which can access all the memory and keep the users separate.

The CDS 2020 is such a system. Basically, it's a smallish box with a number of connectors on the back for

four terminals and a Centronics-interfaced printer. Its small size belies the fact that it can allow up to four users to run CP/M programs independently and concurrently (at the same time).

Inside the computer, the circuitry is based on the STD bus. Originally proposed by Mostek and an industrial controller company called ProLog, the STD bus has been adopted by a large number of manufacturers and is a popular choice for manufacturers of industrial process control computers and equipment. A wide range of processor, memory and I/O cards are available for it, and it has just about the widest range of specialised I/O boards, such as analogue/digital and digital/analogue converters, current loop interfaces, relay drivers and other industrial boards.

The choice of the STD bus reflects the engineering orientation of the 2020's supplier, Creswick Data Systems. This is a division of Creswick Engineering, a supplier of packaging equipment for the food and pharmaceutical industries. Most of Creswick's sales are overseas, which is why you probably don't know them, but they are a fairly major company in that field.

As part of that manufacturing business, the MD of the company, Richard Creswick, decided that it would be a great benefit to have a shop-floor data acquisition system, to capture data about components being used as well as time information. This data could be used to calculate the assembly costs of each section of a machine, thereby giving greater control over costs and productivity.

He approached all the manufacturers of manufacturing systems, only to be told that no-one had such a system. So he decided to develop it himself. This involved designing an industrial-grade 'ruggedised' data logging terminal with a key reader, 16-key keyboard and an alphanumeric display. The Datamaster was the first product from Creswick Data Systems, and the first machines were put into use on the Creswick Engineering floor.

While the Datamaster can capture data, it still needs to be processed, and although a minicomputer could do the job, a micro can be just as effective and a lot cheaper. So Creswick decided to tackle the back end of the system as well.

The result is a range of microcomputers, of which the 2020 is the flagship. It starts with the CDS 5012, a single user system with 64K of memory and twin 800K 13 cm floppy disks. This can be expanded with a hard disk, more memory and I/O ports till eventually one arrives at the CDS 2020.

The system is not as big as I'd expected, at 450 by 184 by 425 mm, particularly bearing in mind that it is a bus-oriented multi-user machine. The front panel carries reset and halt switches and a power indicator, while the power switch is at the back. At the left side of the front panel is a 13 cm disk drive and a micro-Winchester disk drive with a capacity of 21.6 Mbytes.

Inside the box is a 12-slot card cage, of which seven slots were in use. The processor is a Z-80B, running at 4.9152 MHz, which is a tad faster than the average. There's also 256K of memory, which is adequate to support four users under MP/M II.

All in all, there's not much to describe about the hardware. It's well built, with a good solid feel, yet not over-engineered, if you know what I mean. The matt black front panel contrasts nicely with the imitation woodgrain cover, and the system seems quite attractive.

Software

The operating system on the 2020 is MP/M II. As mentioned above, I'd seen Version 1 of MP/M in operation, and it just about convinced me that multi-user operation on eight-bit micros was pushing one's luck a little. However, favourable experiences with MP/M-86 and good reports of MP/M-80 Version II made me think that maybe this new version could redeem the sins of the father, so to speak.

MP/M II requires bank-selected mem- ▶



Creswick Data Systems' CDS2020 multi-user computer.

ory with a 16K bank at the top end of memory which is permanently selected and is used for inter-bank communication. Actually, it doesn't strictly require it, but the system is pretty useless if it isn't configured that way. That top 16K is where the operating system resides, although part of it overflows into the bank-switched area.

MP/M (I or II) is able to load relocatable programs using a slightly more dynamic version of the same process as MOVCPM in standard CP/M. The first part of such a program is a bit map which defines which bytes need to be relocated, followed by the code as it would run at location 0. Once loaded, it is relocated and can run.

Such program files, known as .PRL (Page Re-Locatable) files, are comparatively few and far between. MP/M is supplied with .PRL versions of old favourites such as PIP and STAT, but most commercial software, like dBase and WordStar, is not available in this format. Of course, users of Digital Research's PL/I compiler or RMAC assembler and LINK linker can produce .PRL versions of their own programs.

However, if MP/M II is configured for bank-select operation, as this one is, it is able to load and run standard CP/M .COM files. Thus, the system gives multi-user operation while still being able to run the 'vast library of CP/M software' (to coin a phrase).

So the CDS 2020 is able to run most CP/M software with no alteration. Of

course, programs which do direct output to the BIOS may produce unpredictable results, and programs like disk patchers will generally run into trouble. When using such programs, the system should be run under CP/M anyway, to minimise the risk of upsetting other users.

Like CP/M, MP/M splits disks into 16 user areas, and a user can log into any area to do his work. Creswick has chosen to split the hard disk of this system up, not by user number, but into separate logical disks. Thus, the hard disk was disks A: to M:, while the floppy was drive N:, with all files in user area 0. The reason for this is that the drives (except C: and D:) are each 798K in size, and can be backed up straight onto floppy disk.

C: and D: are just over six megabytes each, which makes backup a bit more awkward.

MP/M is a bit smarter than CP/M about the way it looks for files. CP/M only looks at the current disk and user area; MP/M looks at the current disk, current user, user 0, and drive A:, current user and user 0. Files on drive A: user 0 which have the SYS attribute set are available to everyone, and are termed public files.

The system had a range of software on the various drives, but it had obviously been used for development, as a lot of the files were protected by passwords – another feature of MP/M II. In addition, on some drives, many of the

files were stamped with the date and time of creation and update.

I tried a couple of benchmark tests and found quite respectable performance from the 2020. It completed the Interface Age prime number benchmark in 11 minutes 32 seconds. I repeated the same test with two copies of MBASIC running the same program at the same time, and found that it slowed down by only a few seconds! This would seem to indicate that MP/M does not significantly degrade with additional users running processor-bound tasks – something I did not expect and am at a loss to explain (well, I have a few theories but no proof).

One of the most interesting software packages on the 2020 was dBase II. Now, you must surely be wondering what was so fascinating about dBase – surely I've seen it before? It's not so much dBase itself, but the commands which had been added to it.

Creswick Data Systems have an extension to dBase called dXCM, which adds a number of extra commands to dBase, to enhance operation under MP/M. Running an installation program produces a new program called dBASX.COM. The additional commands (which are even documented in the DBASEMSG.TXT file) support features like unlocking a file to allow other users access (MP/M defaults to unshared file mode), selecting a printer, sending or receiving messages to/from other programs and running other programs. For example, the command

MPM WS

runs WordStar from within dBase. dBase continues to execute at the same time, so the command can be part of a command file. Similarly, the command

DETACH

returns the user to the MP/M 0A> (or whatever) prompt, free to start another program running. Another useful command allows the user to store the system date to a dBase memory variable.

Expansion

The system can support another 144K of memory, enough to support seven users, and of course, it can handle the necessary serial ports. I still feel, though, that such a system will not support seven users all pounding dBase at the same time. Occasional enquiries, so that there may be, say, four users on at once would be OK, but seven number-crunchers or database users might slow the unit dramatically.

Documentation

The CDS 2020 is assembled for Creswick in Taiwan, and the manual that I saw betrays the fact with some Jinglish expressions. The information is all there,

though in a somewhat compressed format and not for the untutored beginner. Certainly the system administrator (as we call those unfortunate souls who are given computers to look after) should have some prior experience with CP/M.

Creswick also supplies the DRI MP/M manuals. Don't wait for the film; although DRI customarily write manuals that can only be understood at first reading by CompSci PhD's, you'd better at least try to wade through them.

Overall Assessment

I gave the CDS 2020 a fairly thorough workout during the time I had it. It plugged together and ran first time, took up a lot less space than my old S-100 box, and ran a lot faster, even with several users.

As I mentioned above, I was a bit pessimistic about MP/M originally, but the 2020 restored my faith in the ability of even puny eight-bit processors to do an amazing amount of work. The implementation of MP/M seemed robust and reliable, and gave no trouble during the review period.

The CDS 2020 will be of interest to those seeking a reliable multi-user system to run general business software or to perform some other complex task. I dare say because of its background the 2020 will be of particular interest to

manufacturing companies as a means of getting a handle on production costs.

I'm impressed. The machine is a

workhorse and should give good reliable service where personal computers just won't do the job. ☐

Specifications and Report Card

Unit:	CDS 2020
Made by:	Creswick Data Systems
Processor:	Z80B
Clock speed:	4.9152 MHz
RAM:	256 Kbyte (expandable to 400 Kbyte)
ROM:	Bootstrap only
I/O:	Four serial (up to seven) ports, two Centronics printer ports
Languages:	Just about any, except Whitesmith's C and others that require a large TPA
Keyboard:	Depends on your terminal
Display:	Depends on your terminal
Graphics:	Depends on your terminal
Peripherals:	Printer, comms, plotter
Expansion:	Additional RAM, etc, through STD bus
Best points:	Multi-user value
Worst points:	Fragmented disk space precludes really large files

Ratings:	Excellent	Very good	Good	Poor
Documentation:			•	
Ease of use:		•		
Functionality:	•			
Support:		•		
Value for money:		•		

Price:	\$10,165
Review unit from:	Creswick Data Systems Pty Ltd, PO Box 150, Yagoona 2199. (02) 728-1299.

COMPUCHURCH™

THE COMPUTERIZED CHURCH RECORD SYSTEM AT AN AFFORDABLE PRICE FOR YOUR CHURCH

Modules include:

- Church Shepherd** – Congregational Management Program
- Church Ledger** – General Church Ledger
- Church Gifts** – Contribution Recording System

Available for most microcomputers using PCDOS, CP/M, CP/M86 or TRS DOS.

In Australia, supported exclusively by



contact us

(07) 48 4382
FREEPOST 2,
P.O. Box 50, Yeronga Q 4104.

specialising in software for Christian service

ONE COMPUTER BOTH 8

AUSTRALIAN COMPANY HAS MORE TO OFFER THAN INTERNATIONALS

THERE are a number of flaws in assuming that large international companies can provide a better product. In particular some Australian companies are able to provide support not matched by the "big guns" such as IBM, Apple, and Digital Corp. When phoning an IBM service centre can you speak directly with the people that designed the machine? Acoustic Electronic Developments, known nowadays as AED COMPUTERS have displayed an uncanny ability to provide superior product technology as well as service unsurpassed in the industry.

JUMP FROM PROGRAM TO PROGRAM — First for Australia

Previously CP/M-based microcomputers were only able to run one program after the other, resulting in their inability to reach full potential in minute-to-minute business activities.

Analysing small businesses it becomes apparent that businessmen are required to swap randomly from function to function. One moment they are production controllers, the next, sales persons next the accountant, etc. By the very nature of office life they seldom finish one task before being interrupted by one more urgent.

The microcomputers inability to rapidly swap from function to function has been overcome by a revolutionary new operating system concept (MPS Multiple Program Selection) developed by AED. At a touch of the keyboard the current task is saved in suspended animation. The user then selects one of nine other tasks, which complete with its screen image, is loaded into the computer and released. The swap takes only six seconds (about 20 times faster than conventional systems). When done with the new task the operator returns instantly to the original.

Swapping programs on conventional microcomputers is slow, requires many keystrokes, and normally there is no menu prompting. MPS, however, is extremely fast, requires only three keystrokes, and is completely menu assisted. Other attempts have been made to solve this problem by creating a fully integrated suite of programs. This approach yields an improvement though still suffers slow swap time and only specially written programs are available for the system. MPS resides in the operating system, therefore offers extreme speed and is compatible with any standard CP/M program.

SUPERAED — The CP/M you're having when you're not just having CP/M

In the first two years of manufacturing microcomputer systems AED became aware of many features that were not provided by the popular CP/M operating system. This shortcoming was holding back microcomputers from reaching their full potential in business, office automation and engineering applications.

Analysing alternative operating systems revealed that some had advantages in some areas but still lacked the end-user oriented features that were of primary concern. It appears that computer system programmers give total priority to hardware, disk file structures, programmers facilities, and the command power to impress engineers and technocrats. This explains why these operating systems, while more powerful, still lack the basic facilities that would make the computer infinitely more useful to the businessman, engineer, doctor, etc., that use it from day to day.

Solving this problem by designing a new op-system was due to the incredible software base available for CP/M. Other company's CP/M look-alikes all have compatibility problems and AED didn't want to join the list. The alternative of developing an extension package to CP/M was adopted with some startling results, all achieved without corrupting one byte of CP/M or its CCP.

After 12 months in development AED released SUPERAED which was an immediate success leading to increased sales of the "AED SUPERCOMPUTER I" and drew considerable interest overseas. After a further 18 months development a new version with a unique multiple program selection capability (MPS) was released, along with a new computer "AED UNIVERSE Supercomputer II" which combined 8 & 16-bit operation in one machine.

Superaed provides many features unique to a CP/M-based system including:

Intelligent Terminal Driver. A special driver for the extremely fast AED UNISERIAL terminal, providing display speed control and intelligent software control over cursor and all screen characteristics.

Keyboard Substitution. Allowing application software to talk to the computer

as though it were the operator. At last one program can use another to participate in the job at hand.

Automatic background memory testing. SUPERAED continuously scans the computers memory, warning the operator of any faults before they cause subtle data errors to creep into your files.

Selection of multiple printers. CP/M provides for only one printer. "SUPERAED" provides for 8 printers which may be selected directly from the keyboard or under software control. Orders can be automatically directed to a printer loaded with order forms, invoices to a printer with invoice forms, etc.

A powerful diagnostic monitor. This is one of the most startling features of "SUPERAED". Unlike other systems the monitor can be entered even when a CP/M program is in use. After using the monitor for diagnostics, experimental, or debugging purposes, you can return right back to the CP/M application. At last you can look deep into the software and hardware system of your computer while the sample is still under the microscope.

OPERATING SYSTEMS — TO GO

The majority of microcomputer systems have either 8-bit 8080, 8085, or Z80 CPUs or 16-bit 8086 or 8088 CPUs. The CP/M operating system has been adopted internationally as the standard for 8-bit machines. CP/M-86 and MS-DOS operating systems share the market for 16-bit machines. Owners of 8-bit machines are limited to 8-bit CP/M software of which there is an abundant variety. Owners of the technically superior 16-bit machines have access to a respectable, yet somewhat more limited variety of software. Choosing which machine to buy can become a nightmare when weighing-off performance, software availability, and the future. The AED UNIVERSE computer simplifies this choice offering the best of both worlds. By employing a software selectable dual 8 & 16-bit CPU the UNIVERSE can run all of the most popular operating systems: CP/M, MP/M, I/OS, Multi/OS, CP/M-86, MS-DOS and more to follow. This approach opens the door to a wide application software range than almost any other computer system. AED are planning to release

& 16-BIT

additional bus master CPUs such as 68000, 16032, and 80286, extending even further the range of operating systems available.

HARDWARE — Built for speed and expandability

The AED UNIVERSE electronics is based on a 20 slot IEEE 696 S100 bus structure. This is the only bus endorsed by an international standards organisation. There are many systems that claim compatibility with this standard but beware as compatibility with and compliance to IEEE 696 mean two different things. An S100 system has many advantages over integrated proprietary systems as it offers greater expandability as products are available from a broad range of vendors. S100 tends to be the first to introduce new technology in a practical form and offers the greatest performance cost ratio.

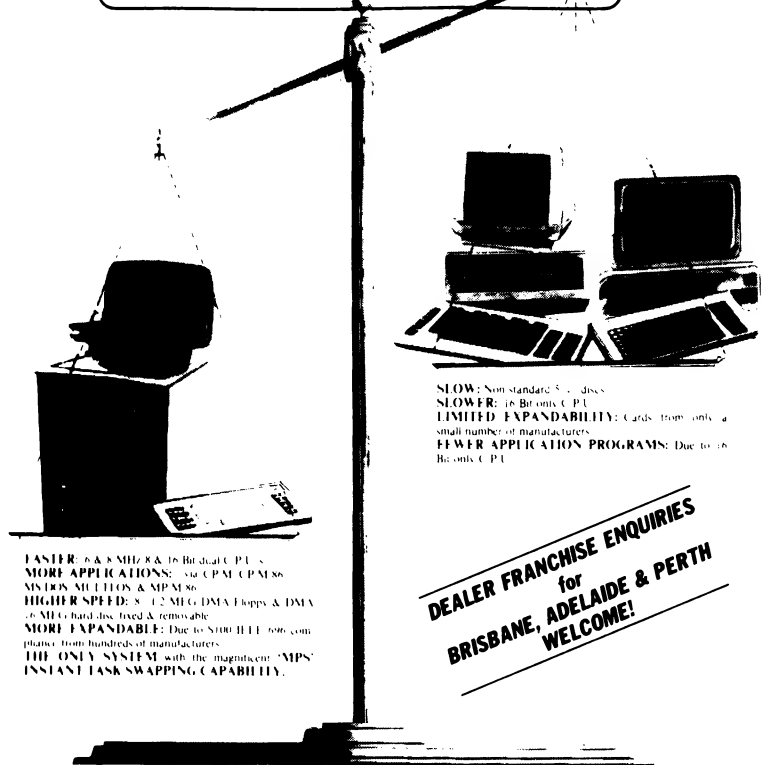
The universe uses a dual 8 & 16-bit CPU which boasts the highest clock speeds available, that is 6MHz on the 8-bit and 8MHz on the 16-bit. The systems memory cards work in both the 8-bit and 16-bit modes making extension of the system to future 16-bit and 32-bit processors viable. The UNIVERSE employs intelligent Direct Memory Access (DMA) temporary bus master floppy and hard disk controllers employing their own processors to remove burden from the system CPU. This technique yields speed far exceeding systems from the large corporations.

Printer and communications input and output are handled by what must be the most powerful I/O system ever offered on a microcomputer system. This card has its own on board Z80 CPU combined with 256K-bytes of memory to dynamically buffer all input and output from the two centronics and two programmable serial ports. The card also boasts a clock/calendar, programmable interrupt system, programmable counter/timers, and a unique power supply monitoring system.

The UNIVERSE terminal is part of the computers main memory system making it several times faster than conventional serial terminals. In fact, the UN-SERIAL terminal is so fast that under WORDSTAR word processing software the UNIVERSE performs more like a sophisticated dedicated word-processor than a normal computer.

UNIVERSE

SUPERCOMPUTER



FASTER: 6 & 8 MHz & 16 Bit dual CPU's
MORE APPLICATIONS: via CPM/CP/M/MS
MINOR MULTITASKING & MP/M/MS
HIGHER SPEEDS: 8 & 12 MHz DMA Floppy & DMA
& 6 MHz hard disc fixed & removable
MORE EXPANDABLE: Due to S100 IEEE 696.com
platform from hundreds of manufacturers
THE ONLY SYSTEM with the magnificent "MPN"
INSTANT TASK SWAPPING CAPABILITY.

SLOW: Non standard 5.25" discs
SLOWER: 16 Bit only CPU
LIMITED EXPANDABILITY: Cards from only a
small number of manufacturers
FEWER APPLICATION PROGRAMS: Due to 16
Bit only CPU

DEALER FRANCHISE ENQUIRIES
for
BRISBANE, ADELAIDE & PERTH
WELCOME!

We can help you with
• CONSULTANCY • SERVICE CONTRACTS • CUSTOM SOFTWARE • STANDARD SOFTWARE

The choice is yours.



Contact AED for your local dealer or information kit.



For details or an information kit contact:

Sydney: AED COMPUTERS, 24 Darcy St, Parramatta, NSW 2150.

Phone (02) 689 1744, (02) 681 4966. Telex AA70664 GIRFRI.

Melbourne: AED COMPUTERS (Melbourne): ELSTON COMPUTERS PTY LTD,
53 Waverley Road, East Malvern, Vic. 3145.

Phone (03) 211 5542. Telex AA30624 ME447.

Canberra: AED COMPUTERS (Canberra), 217 Northbourne Ave, Canberra, ACT 2601.
Phone (062) 47 5348. Telex AA62898 HARSUR.

SUPPORT more the merrier

Engineering and service support for AED systems is second to none in the industry. Phoning an AED sales and service centre puts you in contact with engineers rather than salesmen. Usually the engineer was involved in one or more aspects of the machines electronic or operating system design. Few if any multi-nationals can offer this ready access to engineering support. AED has chosen as agents, engineering companies involved in sales instead of sales companies involved in engineering and provide complete engineering service and sales support

in Sydney, Melbourne, and Canberra, and intend to soon include Brisbane, Adelaide, and Perth.

AED can provide complete System analysis and consultancy. SOFTAED a Sydney-based division of AED produces custom written applications where off-the-shelf software is not suitable. AED installs the systems and provides any necessary training.

Service contracts are available covering most of NSW and Victoria. AED were one, if not the first computer company in Australia to provide a one-year warranty, a true reflection of the reliability of the machines and the companies belief in them.

Oric-1 Review



The Oric-1 has just arrived in Australia from the UK where, if the advertising is to be believed, it is extremely popular. Evan McHugh investigates.

THE ORIC-1 is a cash-and-carry computer. The basic machine is small with several good features that should make it popular in Australia, but it also has some aspects that nag a little.

The entire works are housed in a compact, presentable case in blue, black and grey. The lettering on the keys is clear, and the keys are like those you find on a Texas Instruments calculator, only slightly larger – more about them later.

The expansion sockets are along the back of the machine and there is a power supply with a box that plugs into the mains. This has the slight disadvantage of having to go in at the end of a power board since it is so big that it is difficult to plug anything in next to it.

From left to right, the sockets at the of the machine back are: 9V DC power in, expansion bus, printer interface, cassette interface, colour monitor interface and T.V. interface. The amount of information provided on each interface varies. For example, there is plenty on the

printer and cassette, but little on the expansion bus.

The Oric has 48K of Random Access Memory and 16K of Read Only Memory which contains a version of interpreted BASIC. The machine uses a 6502 processor and it supports assembly language which can be run from within BASIC.

Zap, Ping, Shoot ...

The basic model has a comprehensive range of commands similar to those of most machines of the same price. Additional features include four preprogrammed sounds: ZAP, PING, SHOOT and EXPLODE. There are three modes for using the monitor (the manual says there are four, but I could only find three): text mode, and hi-res and lo-res modes. There are also eight colours available and INK and PAPER commands to set foreground and background colours.

Numerous drawing, patterning and display commands can be used in relation to the various modes. There is also an alternative character set which can be used for creating images.

The program editing facilities are not very powerful. You will quickly find that a word processor is more useful if you have much editing to do.

Spiffing Manual

The manual is one of the most refreshing aspects of the Oric. It displays the typical English trait of trying, at the outset, to make something fairly difficult appear easy. As you progress the information becomes more and more complex until, when you reach the back, you are getting right into the very guts of the thing. By then you are working at a level where it helps to have a degree in something. It's a joy to have a manual that looks after the beginners at the front and the experts at the back. The volume is about 160 pages long with ring binding (hooray!) and a manageable A5 size.

Essentially a BASIC manual, it guides you through learning your first language and has several good features. First, it has a section on structured programming. It is not comprehensive, but it will let you know that there is such a thing as structured programming and should stimulate your interest in the subject.

Second, the manual has a summary of the BASIC instruction set at the back. This gives you a ready reference guide so that you don't have to wade through the whole manual looking for an explanation of an instruction. Every manual should have one.

The manual also has several appen-

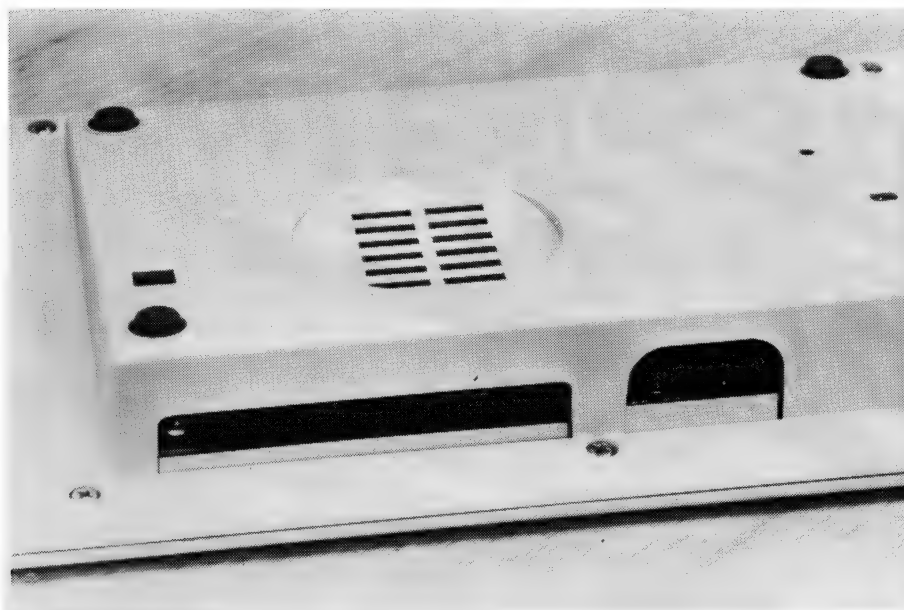
dices which provide a great deal of technical information – the hackers will go bananas. There's a memory map, list of control characters, ASCII code chart, pin output chart, text screen map, high-res screen map, error code list, machine instruction list and more.

Software available for the Oric is oriented towards the games player. There are a few serious packages such as a word processor, some educational games, assemblers and disassemblers, a Forth package and monitor drivers.

The games are of high quality and just like those in arcades. Hopefully, more comprehensive software will appear on the market and other 6502 machine users will make some public domain software available.

Only One Real Fault

I found our Oric computer to have only one real fault – the keyboard. How do you use a computer if you can't type on it? The Oric's designers did not have touch typists in mind when they invented this keyboard. The keys are too small and the travel is unbearable. The keyboard has raised surfaces across the top and bottom, which makes the space bar almost impossible to use, since your thumb stops going down before it has properly



A view of the underside of the Oric, showing its expansion slots at the back.

depressed the bar. What's worse, when you press down some keys they stay down (for the whole count)!

Apart from this problem, which isn't much of a drama if you are a two finger typist, the Oric is an inexpensive machine well worth a serious look. The manufacturers can be proud of their

documentation and the machine capability. The 64K Oric retails for \$399 and a model with 16K RAM is also available, at \$299.

Your Computer's review machine came from Oric Computers, 691 Whitehorse Road, Mont Albert 3127. Phone: (03) 898 9533. □

PASCAL

for the Commodore 64

G-Pascal:

The Complete Games System

Fully supports the Commodore 64's graphic and sound effects capabilities in a self-contained, easy to use programming package.

See your dealer today for a demonstration.

Available on disk or cassette for \$79.50

Gambit Games

Dealer enquiries:

P.O. Box 124, Ivanhoe, Victoria 3079.

Phone: (03) 497 1283

BEST VALUE BY FAR!

the brilliant VZ-200

OVER 10,000
SOLD IN JUST A
FEW MONTHS!



find out more!

**look at this great
range of educational, financial
& games software**

SPEED READING*

Ideal for improving reading and comprehension skills—written by an experienced Australian primary school teacher! Cat X-7257.

TYPING TEACHER

Even if you're a complete newcomer, this program will quickly get you familiar and confident with the keyboard. Cat X-7258.

ELEMENTARY GEOMETRY*

Not too strong on geometry? This program should help. It uses a friendly explanation/quiz approach. Cat X-7256.

STATISTICS 1

A great introduction to the basic principles of statistical analysis. Tests your knowledge with examples! Cat X-7251.

STATISTICS 2*

Following on from Stat. 1, this program views more advanced concepts (eg: the Chi square test). Cat X-7252.

MATRIX*

Working out mathematical matrices can be a real chore. Use this program to help develop your skills. Cat X-7253.

TENNIS/GOLF LESSON*

Challenge your computer to a game of tennis or golf. It plays by the rules, so you'll learn about the game. Cat X-7254.



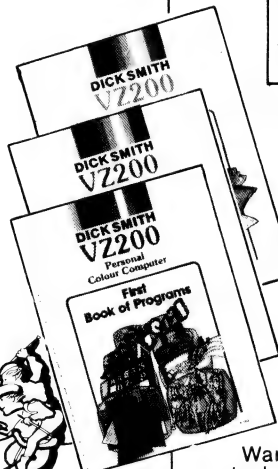
Exciting New Games

POKER—Cat X-7233
SLOT MACHINE—Cat X-7234
BLACK JACK*—Cat X-7235
CIRCUS—Cat X-7236 BIORHYTHM—Cat X-7237
HORSE RACING*—Cat X-7238
VZ INVADERS—Cat X-7239 DYNASTY DERBY*—Cat X-7240
VZ GHOST HUNT—Cat X-7242
HOPPY—Cat X-7243 SUPER

...and lots more, too! Come on in— there's something for everyone! Just **\$1250** EA

Sky-high action & thrills!

Amazing! Try your hand at Lear Jet* (Cat X-7241)...or play Air Traffic Controller* (Cat X-7249. It's fast, furious and lots of fun. **\$2995** EA



Introduction to Computing

Are you a 'babe in the woods' when it comes to computing? Here's a book written just for you — in language you can understand! Cat B-7200.

ONLY **\$995**

VZ-200 Technical Manual

Want to get the most from your VZ-200? This technical manual explains all the ins and outs, ups and downs. For the real computer enthusiast or beginner who wants to know more. Cat B-7204.

JUST **\$950**

First Book of Programs

Tried, trusted and true programs for your VZ-200. There's something for everyone — and remember, they're all written in BASIC so you can save them on cassette. That means you'll only have to key them in once, to use them anytime! Cat B-7202.

ONLY **\$695**

Joystick Controllers

AND INTERFACE!

A pair of sturdy, super-responsive joysticks that add a whole new dimension to action games! Cat X-7212.

\$3950



*Requires 24K of memory

DICK SMITH Personal Computer

With all the personal computers around these days, you're probably wondering which one is the best value.

Before you buy any computer, take a look at three things: its power (or usefulness), its back-up and its price/future.

The Dick Smith VZ-200 features an 8K Microsoft BASIC, PLUS an additional 8K 'enhancements'. Compare that to the Tandy MC-10! And it has 8K user memory 'inbuilt': compare that to the VIC 20!

The Dick Smith VZ-200 is backed, of course, by the Dick Smith Electronics organisation. Complete technical and service facilities, program development, etc — all guaranteed.

The Dick Smith VZ-200 sells for only \$199 — the first personal colour computer in Australia to sell below \$200! There are many other computers now being unloaded around this figure — but be careful! Some companies have already gone broke and others may be drastically reducing prices just to clear dead stock! You could be buying an 'orphan'!

It's the computer for today! Don't miss your chance — snap one up for an amazing **\$199**

NOW IS THE TIME TO BUY!

Low-Cost
Colour Monitor

Don't want to tie up the family's colour TV? This high quality, 36cm colour video monitor gives bright, crisp pictures — sound too! Cat X-1195.

\$389



look at these exciting ways to expand your system

VZ-200 Datasette

Get optimum performance from your VZ-200! How? By storing programs & data on this deluxe recorder! Better than any other — because it's made especially for the VZ-200! Cat X-7207.

value at **\$69⁵⁰**

Want more memory? Just plug this in & you've got it!

16K Memory Module

It couldn't be simpler. Add this module, and expand the VZ-200's RAM memory to a generous 24K! Cat X-7205.

\$79

Use a Centronics type printer! Printer Interface

Lets your VZ-200 talk to almost any Centronics-type printer. Top quality! Cat X-7210.

\$49⁵⁰

PRICE/TECHNOLOGY BREAKTHROUGH!

Four-colour Printer/Plotter

Don't buy just a printer — here's a fantastic NEW 4-colour printer that's an X-Y plotter as well! Produce graphs, pie charts, printing in many different sizes and colours. It's all so easy to do, using simple commands in your BASIC programs! Cat X-7208

\$299

DICK SMITH Electronics

Head Office & Mail Order Centre: PO Box 321, North Ryde, NSW 2113.

Ph: (02) 888 3200.

PLUS 39 STORES ACROSS AUSTRALIA!



DSE A690 TH



Have Computer Will

Destroying myths about micro-computer reliability is a hard task. One Queensland firm proved the robustness of its Toshiba micro by putting it on the back of a semi-trailer and hauling it several thousand kilometres to Rockhampton. Leigh and Barbara Hemmings tell the tale...

"MICROS REQUIRE an ivory tower, air conditioning, humidity control, and white-coated, highly paid technicians running frantically in all directions."

Destroying microcomputer myths is a hard task; some firms just rely on trying to talk sensibly about the required operating conditions for modern micros, but others demonstrate the new robustness and reliability of micros in more extreme ways. One Queensland firm that decided to put a computer on the back of a semi-trailer and haul it many thousands of kilometres to Rockhampton (to a Brahman cattle-breeders' convention), then out to the far west of the state, most certainly falls into the second category.

The firm is Shannon Robertson Systems, and this novel demonstration of faith in a product came about with typical Queensland country casualness, as Ralph Shannon explained.

"A client of ours who does powerline construction work on contract out of Longreach was buying a system to do his job costing and accounting. At the time he was here he said, 'You wouldn't want to go for a run to Longreach in an old truck I've just bought, would you?' I said okay, just for the fun of it, and also that I'd deliver his computer at the same time on the back of the truck. 'Oh no', he said, 'It's too bloody rough - you're not going to deliver my computer like that.'

"So I thought: why not? We were confident it would make it, and even if it didn't we could show the reality of Toshiba's modular construction replacement."

Sun, Surf And Computers

Aside from truck-mounted computers, Shannon Robertson Systems is unusual in another way as well. Instead of being

located in Brisbane they chose Nambour, on Queensland's Sunshine Coast; lots of surf, sun, sand and whatever takes your fancy. Not a usual working environment for office-pale programmers, but apparently ideal for promoting high productivity.

As Ralph Shannon put it: "Being here, we offer a lot more and so get the best people to work for us. Our programmers have sailboards; if they want to go out and sail for the afternoon, they go. They then come back and work at night or early in the morning. If you give people a better working environment you get better productivity."

And productivity is vital. Initially the business was only Ralph Shannon and Peter Robertson, and what prompted them to get into the computer industry in the first place was a Department of Primary Industry seminar.

"It was the straw that broke the camel's back," said Ralph Shannon. "Supposedly rural management education on 'Computers and Agriculture', they proceeded to tell farmers about computer fraud, input and output devices, in short an absolute waste of a day."

Despite this frustration Ralph and Peter could see the value of computers in primary industry. After surveying potential customers (no one responded in a negative manner) and competitors (in 1980 there was virtually nothing on the market), they sat down and developed specifications for a range of packages, initially for the beef and cane industries.

The result was 'Beef Pack' and 'Cane Pack', each suite of programs designed to fulfil all the requirements of those two industries: recording the physical productivity, area analysis, and machinery cost analysis - 16 or 17 programs in each pack. They received endorsement from the Cane Growers' Council, put a few computers in the back of a car and went out on the road. They got 15 sales in that first year.

From there it should have been plain sailing, but at that stage they were buying their computers through a Brisbane firm, which was in turn buying through a Melbourne firm, which was importing from someone else in the USA. It was a long, long way back to the manufacturer. Too far.

"We needed a computer whose manufacturer was directly representing the product. That way we could get the support we needed, plus projection on new products so the development work we were doing would have application for as long a period as possible.

"Our attention was drawn to Toshiba;

we tried them, liked them and redeveloped all our software for Toshiba computers. Ultimately, with more of our software on the Toshiba system than anybody else, Toshiba's attention was drawn to us. Since we had a high level of expertise, we were called upon to provide other software for Toshiba and to provide a consultancy service - and that has developed to the extent that we are very firmly Toshiba software consultants. Any software marketed under the Toshiba name in Australia is ours."

With full-time programmers on staff, as well as extensive rural packages, Shannon Robertson Systems has developed a broad range of small business software - debtors, general ledger, inventory, job costing, product scheduling. But the program that has had the greatest amount of development work done on it is Real Estate Property Management. They estimate having done about 5000 hours' work on the program, not counting nearly 18 months spent in liaison with industry organisations. It now has endorsement by the Real Estate Institute of Queensland - the first package endorsed by that Institute.

Define Your Needs Before Buying

However, Shannon Robertson doesn't see any point in developing a massive program unless it's going to relate to the potential market.

"Rather than developing a program, then taking it out and trying to fit it to a business, we always adopt a front-end marketing approach to the whole thing: find out what the problem is, what the requirements are, and work back to the

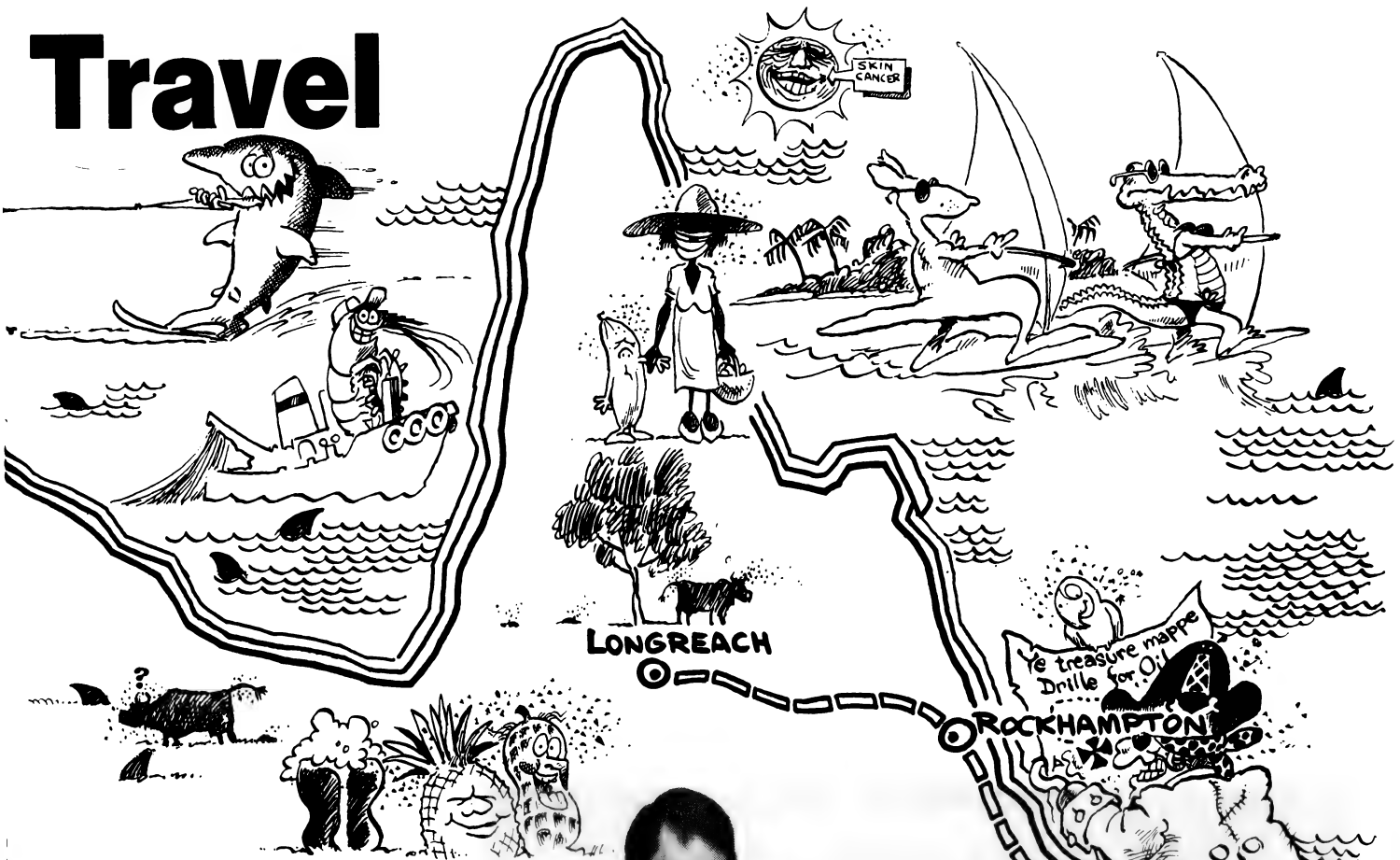
In doing this they feel it is vital that anyone contemplating installing a computer should sit down first and decide what the problems are, how they want to solve those problems, and, interestingly enough, establish what they don't want the computer to do.

By defining problems and needs before talking to a computer consultant, a better understanding develops from both the systems analyst/programmer side and the client's side.

Shannon Robertson's best clients are those who have had experience with a bureau and/or accounting machines. This type of client knows the advantages and disadvantages of computers. The problem clients are those who bought a system on a whim.

To counteract this type of client, there needs to be much more computer education within industry. Like many firms in their situation, Shannon Robertson spend much of their time selling the concept of computers, as much as selling

Travel



their products and what they have to offer as a company. A short while ago, when promoting new concepts you would run against people who were implacably opposed to the idea of computers. Maybe today this is changing.

"In all the demonstrating and seminars we have done we never had anyone say, 'That's a load of rubbish'. The comment is always, 'It's a thing of the future'. Most people see computers not as a matter of *if*, but rather a matter of *when*. The only people who don't have that idea are the really old guys who feel they would rather leave the decision to their son or daughter. But there again, other guys aged 65, 70 and more are delighted with the idea of computers and want to get right into it."

Back To That Truck

And finally back to that Toshiba computer experiencing the Australian environment first-hand on the back of a truck heading for Longreach. Its arrival will cause a lot of interest in the district, and it's growing, vital interest that isn't really being met with sufficient information or product availability.

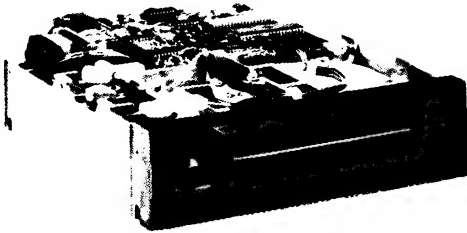
"One thing really glares out: it's not only primary producers, but also people in provincial towns, like Longreach, who feel left out on a limb as regards to technology. They are delighted to talk to someone who is in the mainstream of technological advances, just to find out what's going on." □

Left: Peter Robertson showing the Toshiba's modular construction.

Below: Ralph Shannon with the computer, ready to start on its long journey.



TANDON DISK DRIVES



TANDON NEW EIGHT-INCH THINLINE DISK DRIVES

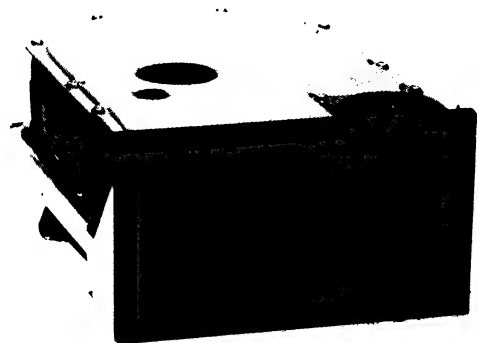
- Direct drive.
- Proprietary, high-resolution, read-write heads patented by Tandon.
- D.C. only operation—no A.C. required.
- Industry standard interface.
- Three millisecond track-to-track access time.

TANDON MODEL TM500 SERIES WINCHESTER DISK DRIVES

Tandon's low cost 5¼" rigid disk drive features an on-board microprocessor which calculates the optimum positioning algorithm, yielding an Average Access Time of 110 milliseconds. This product family includes 1, 2, and 3 platter models with unformatted capacities of 6.4, 12.8, and 19.1 megabytes, respectively.

Up to four Tandon TM500's can be daisy-chained on a single bus, which provides a capability of up to 76 megabytes of on-line storage (unformatted) in a single system.

These drives are compatible with controllers that use an industry standard interface (ST 506).



Tandon Model TM-100 Mini-Floppy Disk Drives

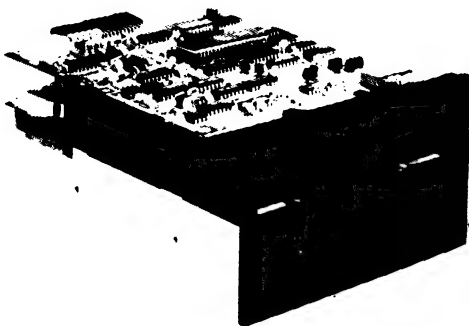
Tandon's TM-100 family of mini-floppies offer the absolute highest storage capabilities of any 5¼" high-speed, random access disk drive available in two single head and two double head models, all double density.

Unsurpassed Storage Capacity—Up to an incredible 1000K bytes information on 160 tracks. Recording density is 5877 BPI.

Advanced Dual-Head Design—Tandon Magnetics has for years been the leading designer and supplier of read/write heads to most major disk drive manufacturers.

Increased Throughput—Tandon's TM-100 have a track-to-track access time of only 5 milliseconds (an incredible 3 milliseconds double track density).

Proven Reliability—Designed for total reliability, as demonstrated by more than 50,000 production models in operation.



AE ADAPTIVE
ELECTRONICS P/L

418 St. Kilda Rd. Melbourne, 3004. Phone (03) 267 6800
Sydney: Phone (02) 419 5579. Newcastle: Phone (049) 23 343

GIANT

**pocket
programs
special!**



SPONSORED BY:



NUTEK

COMPUTING

**1 Kent Street, Bicton, 6157, W.A.
Telephone: (09) 330 7336.**

SINCLAIR

Gold Digger for ZX80

By Paul Vandenberg,
Cabramatta, NSW

The idea of this game is to collect as many gold (light dots) pieces as possible, without running into any walls (dark dots and lines).

Use the keys 5, 6, 7, 8 to move your character around the screen, not forgetting to press return after each move.

Incidentally, the score is POKEd onto the screen using a digits column, tens column and a hundreds column.

Note: Your ZX80 needs at least 2K of RAM to run this game.

```
1 LET W=0
2 LET Y=0
3 PRINT"SCORE=0000",,,,
4 FOR F=1 TO 21
5 PRINT,,,,,
6 NEXT F
7 LET C=128
8 LET B=2
9 FOR F=1 TO 2
10 FOR A=1 TO 32
11 GOSUB 9000
12 NEXT A
13 LET B=22
14 NEXT F
15 LET A=32
16 FOR B=3 TO 21
17 GOSUB 9000
18 NEXT B
19 LET A=1
20 FOR B=3 TO 21
21 GOSUB 9000
22 NEXT B
23 FOR F=1 TO 20
24 LET A=RND(30)+1
25 LET B=RND(19)+2
26 GOSUB 9000
27 NEXT F
28 LET C=9
29 FOR F=1 TO 10
30 LET A=RND(30)+1
31 LET B=RND(19)+2
32 LET C=CODE("Y")
33 LET BC=128
```

```
40 LET A=YH
41 LET B=YV
42 LET C=YC
43 GOSUB 9000
44 LET P=0
45 LET GO=1
46 LET C1=0
49 LET C2=0
50 REM: INPUT GO
90 INPUT G
92 IF P=10 THEN GOSUB 300
94 IF C1=10 THEN GOSUB 310
101 LET C=0
102 LET A=YH
103 LET B=YV
104 GOSUB 9000
105 IF G=5 THEN LET YH=YH-1
106 IF G=8 THEN LET YH=YH+1
107 IF G=6 THEN LET YV=YV+1
108 IF G=7 THEN LET YV=YV-1
109 LET A=YH
110 LET B=YV
111 GOSUB 9000
112 IF C=128 THEN GOTO 9010
113 IF C=9 THEN LET P=P+1
114 LET C=P+28
116 LET A=10
117 LET B=1
118 GOSUB 9000
119 IF GO=(GO/10)*10 THEN GOSUB 180
120 LET A=YH
121 LET B=YV
122 LET C=YC
123 GOSUB 9000
124 LET A=YH+RND(2)-1
125 LET B=YV+RND(2)-1
126 LET C=BC
```

```
129 GOSUB 9000
130 LET GO=GO+1
131 GOTO 90
180 LET C=9
182 LET A=RND(30)+1
183 LET B=RND(19)+2
181 FOR F=1 TO 2
184 GOSUB 9000
185 NEXT F
186 RETURN
300 LET C1=C1+1
301/LET P=0
302 LET C=C1+28
303 LET B=1
304 LET A=9
305 GOSUB 9000
306 RETURN
310 LET C2=C2+1
311 LET C1=0
312 LET C=C2+28
313 LET B=1
314 LET A=8
315 GOSUB 9000
316 RETURN
9000 LET W=(B-1)*33+A
9001 LET Y=PEEK(16396)+PEEK(16397)*256
9002 POKE W+Y,C
9003 RETURN
9004 LET W=(B-1)*33+A
9005 LET Y=PEEK(16396)*256+PEEK(16397)
9006 LET C=PEEK(W+Y)
9007 RETURN
9010 CLS
9020 PRINT"SORRY, YOUR DEAD."
9021 PRINT"YOU GOT ";C2;C1;P;" POINTS"
9022 PRINT"IN ";GO;" GOES"
```

Graffiti for ZX81

By Jason Teh, Doncaster, VIC.

THIS PROGRAM is for a ZX81 with 1K of memory, and it enables the user to write letters which are eight times larger than normal!

Any key pressed will result in an enlarged version on the screen of that character. For a space, you have to press NEWLINE because the space key acts as BREAK. Pressing SHIFT and NEWLINE together will copy the screen to the print-

er. It also does this automatically when you fill the whole screen.

As listed, you can fit in eight characters to a line and, with a 16K machine, fill up the whole screen. However, on a 1K machine you will find you run out of memory after three lines or 24 characters.

'Graffiti' works by looking at the character set dots in the ZX81 ROM at address 7680,

which contains all the possible characters. Each character is stored as eight binary bytes, with eight 'bits' each. This program tests each 'bit' and if it is set, the program PLOTS a pixel and the FOR/NEXT loops then control the position of the pixels on screen.

This program can also RUN on a ZX80 with 8K ROM.

GRAFFITI - BY JASON TEH (C)

SINCLAIR

```

1 REM GRAFFITI 27/2/83
10 LET Y=43
20 FOR C=1 TO 8
30 PAUSE 4E4
40 POKE 16437,255
50 LET M=CODE INKEY$
60 IF M=118 THEN GOTO 160
70 IF M=121 THEN GOTO 190
80 FOR N=0 TO 7
90 LET L=PEEK (7680+N*8*M)

100 FOR X=1 TO 8
110 LET L=L/2
120 IF L<>INT L THEN PLOT 8*C-X,Y-N
130 LET L=INT L
140 NEXT X
150 NEXT N
160 NEXT C
170 LET Y=Y-8
180 IF Y>6 THEN GOTO 20
190 COPY

```

Eye Robot for Sinclair

By D. Thorpe, Glemunga, SA

YOU ARE one of a party of four humans being hunted through a dark building by four robots. Your group is armed with a laser cannon and six shots. A robot's only weakness is the half-second needed for its search-and-aim mechanism to operate. Each robot is able to produce a hologram, or image of itself. Now a fake robot is in itself no threat, but you only have six shots, so you shouldn't waste any blasting at apparitions. If you find yourself with fewer shots than deadly robots, you are obviously doomed. A robot can come through one of two doors, so you need to watch both.

A real robot will zap you half a second after it first appears, unless you get it first by pressing NEWLINE. If pressed within the first half-second the NEWLINE key acts as a trigger

of the laser cannon. After half a second it reverts to simply being the NEWLINE key. So, if a hologram robot appears, you need to refrain from pressing NEWLINE until after half a second has passed. The two types of robot appear identical, except the real ones has two white eyes. So the rule is "Don't fire till you see the whites of their eyes". (*Oh no! - Ed.*) If you can get four dismembered robots on the screen, you have saved the earth.

How to play:

1. Enter the program and press RUN.

2. Be ready when you press NEWLINE. The first robot (real or fake) will appear at some random instant within the next two seconds. You will need only the NEWLINE key from then on. GOOD LUCK!

```

10 LET Q = 500           Set reaction time
20 LET H = 4             Number of humans
30 LET M = 16414         Reference for timer
40 LET S = 0             Number of robots destroyed
50 LET Z = 6             Number of shots in cannon
60 CLS
70 LET R = RND(2)        For deadly or fake robot
80 LET P = RND(3)        For place robot appears
90 LET A = RND(500)      For a random period of up to
100 FOR K = 1 TO A       two seconds of dark screen,
110 PRINT K;             before robot appears
120 CLS
130 NEXT K
140 POKE M,0             Sets timer to zero
150 POKE M + 1,0
160 IF P = 1 THEN GOSUB 610
170 PRINT " ";CHR$(127+R);""
180 IF P = 1 THEN GOSUB 610
190 PRINT CHR$(131);"";CHR$(131)
200 IF P = 1 THEN GOSUB 610

```

```

210 PRINT CHR$(130);CHR$(131);""
220 PRINT
230 INPUT C$             Stops timer
240 LET T=(PEEK(M)+PEEK(M+1)-4)*20 } Calculates and prints time
250 PRINT "TIME:";T;"MILLISECS" } elapsed in milliseconds
260 IF R = 1 AND T>Q THEN GOTO 370
270 IF R = 1 THEN GOTO 440 } Consequences of your action
280 IF R = 2 AND T>Q THEN GOTO 490
290 LET Z = Z - 1        One less shot left
300 LET S = S + 1        One more robot destroyed
310 FOR B = 1 TO S       Prints required
320 PRINT "O";CHR$(145);""; } number of
330 NEXT B               } dismembered robots
340 IF S = 4 THEN GOTO 540
350 PRINT
360 GOTO 400
370 PRINT "GOOD"
380 PRINT
390 GOSUB 590
400 PRINT
410 PRINT "PRESS N/L"    } For the next
420 INPUT E$             } confrontation
430 IF E$="" THEN GOTO 60
440 LET Z = Z - 1        One less shot left
450 PRINT "FOOLED"
460 GOSUB 590
470 IF Z<4 - S THEN GOTO 550
480 GOTO 400
490 LET H = H - 1
500 PRINT H ; "HUMANS SURVIVE" Feedback on present situation
510 IF H = 0 THEN GOTO 550
520 GOTO 400
530 PRINT
540 PRINT "YOU WIN"
550 PRINT "ANOTHER GO?PRESS Y OR N"
560 INPUT D$
570 IF D$="Y" THEN GOTO 10
580 IF D$="N" THEN LIST
590 PRINT Z; "SHOTS AND"; } Feedback on present situation
    4 - S ; "ROBOTS LEFT"
600 RETURN
610 PRINT ,,,
620 RETURN

```

Try and Catch Me for ZX80

By Paul Vandenberg, Cabramatta, NSW

Note: Your ZX80 needs at least 2K of RAM to run this game.

The idea of this game is to collect as many stars as possible before getting trapped. It is not as easy as it sounds as you are constantly being surrounded by dark blocks. You must not run into either the light blocks (border) or the dark

blocks unless you are completely trapped. To make things even harder, some of the stars disappear if you don't get to them quickly enough.

5=Left, 6=Down, 7=Up, 8=Right

You have to make a few moves before the first star appears.

BET YA CAN'T CATCH ME

```

1 LET W=0
2 LET Y=0
3 PRINT"SCORE=0"
4 PRINT" (32*shift(A))"
5 FOR F=1 TO 16
6 PRINT"(1*shift(A)",,,,"7 spaces)(1*shift(A))"
7 NEXT F
9 PRINT" (32*shift(A))"
10 LET G=0
11 LET SC=0
12 LET H=RND(30)+1
13 LET V=RND(16)+2
14 LET SH=0
15 LET SV=0
16 LET A=H
17 LET B=V
18 LET C=CODE("Y")
19 GOSUB 9000
40 INPUT M
41 LET A=H
42 LET B=V
43 LET C=0
44 GOSUB 9000
45 IF M=5 THEN LET H=H-1
46 IF M=8 THEN LET H=H+1
47 IF M=7 THEN LET V=V-1
48 IF M=6 THEN LET V=V+1
49 LET A=H
50 LET B=V
51 GOSUB 9004
52 IF C=20 THEN GOSUB 8000
53 IF C=128 OR C=9 THEN GOTO 1000
54 LET A=H
55 LET B=V
56 LET C=CODE("Y")
57 GOSUB 9000
58 LET Z=RND(4)
59 LET C=128
60 LET A=H
61 LET B=V
62 IF Z=2 THEN LET B=V-1
63 IF Z=4 THEN LET B=V+1
64 IF Z=1 THEN LET A=H-1
65 IF Z=3 THEN LET A=H+1
66 GOSUB 9000
67 LET G=G+1
68 IF G=(G/7)*7 THEN GOSUB 2000
69 IF G=((G/25)*25) THEN GOSUB 3000
999 GOTO 40
1000 REM SCORE
1001 PRINT"YOU GOT A SCORE OF ";SC
1002 PRINT"YOU ALSO LASTED ";G;" GOES."
1003 STOP
2000 LET SH=RND(30)+1
2001 LET SV=RND(16)+2
2002 LET B=SV
2003 LET A=SH
2006 LET C=20
2007 GOSUB 9000
2008 RETURN
3000 LET A=SH
3001 LET B=SV
3002 LET C=0
3003 GOSUB 9000
3004 RETURN
8000 LET SC=SC+5
8001 LET F=1
8002 LET S$=STR$(SC)
8003 LET S1=CODE(S$)
8004 IF CODE(TL$(S$))=1 THEN GOTO 8020
8005 LET S2=CODE(TL$(S$))
8006 IF CODE(TL$(TL$(S$)))=1 THEN GOTO 8020
8020 LET A=7
8030 LET C=S1
8031 GOSUB 9000
8032 IF SC<10 THEN RETURN

```

```

8033 LET A=8
8034 LET C=S2
8035 GOSUB 9000
8036 RETURN
9000 LET W=(B-1)*33+A
9001 LET Y=PEEK(16396)+256*PEEK(16397)
9002 POKE W+Y,C
9003 RETURN
9004 LET W=(B-1)*33+A
9005 LET Y=PEEK(16396)+256*PEEK(16397)
9006 LET C=PEEK(W+Y)
9007 RETURN

```

COMMODORE

Sprite Racer for Commodore 64

By Justin Bridgman-Lee, Stirling, SA

The aim of this game is to stay on the road for as long as possible. If you touch the edge of the road (in red) you will skid, which may force you off the road.

The controls are:

'A' - to move left

'B' - to move right

At the end of the game you will be rated depending on your score.

```

10 V=53248:POKE 2042,13
15 POKE 53281,1:POKE 53280,5
20 FOR M=0 TO 62:READ D:POKE 832+M,D:NEXT M
25 POKE 54296,15:POKE 54277,255:POKE 54278,255:POKE 54276,33
30 POKE V+23,4:POKE V+29,4:POKE V+41,6
35 PRINT" ";
40 X=162:S=0
45 XX=16:POKE 54273,4:POKE 54272,0
50 FOR N=1 TO 25:PRINT TAB(XX);"  " :NEXT
55 POKE V+5,60:POKE V+4,X:POKE V+21,4
60 FOR N=1 TO 40:POKE 54272,N:FOR M=1 TO 10:NEXT:NEXT
65 R=INT(RND(1)*3)-1
70 XX=XX+R
75 IF XX>29 OR XX<2 THEN XX=XX-R*2
80 FOR M=1 TO 6:PRINT TAB(XX);"  " :NEXT
82 IF X<18 THEN X=18
83 IF X>298 THEN X=298
85 P=55496+(X-18)/8
90 IF PEEK(P)=1 OR PEEK(P+4)=1 THEN 500
92 IF PEEK(P)=2 OR PEEK(P+4)=2 THEN POKE 54276,129:FOR M=1 TO 50:NEXT:POKE 54276,33
95 IF PEEK(P)=2 OR PEEK(P+4)=2 THEN X=X+(INT(RND(1)*3)-1)*8:POKE V+16,INT(X/256)*4
96 IF PEEK(P)=2 OR PEEK(P+4)=2 THEN POKE V+4,X-INT(X/256)*256:GOTO 82
100 GET K$:X=X+(K$="A")*8-(K$="B")*8
102 IF K$="A" OR K$="B" THEN POKE 54296,0:FOR N=1 TO 20:NEXT:POKE 54296,15
105 POKE V+16,INT(X/256)*4
110 POKE V+4,X-INT(X/256)*256
115 S=S+10
120 GOTO 65
500 POKE 54276,129:FOR N=1 TO 100:NEXT
501 FOR N=1 TO 5:POKE V+41,2:FOR M=1 TO 100:NEXT:POKE 53280,2:POKE 53281,7
505 POKE V+41,6:FOR M=1 TO 100:NEXT:POKE 53281,1:POKE 53280,5:NEXT
506 POKE 54296,0
510 POKE V+21,0:PRINT" ";
520 PRINT " YOU SCORED:";S;" POINTS"
521 IF S<200 THEN PRINT" A TWO YEAR OLD COULD DRIVE BETTER!!":GOTO 530

```

COMMODORE

```
522 IF S<500 THEN PRINT "WOMAN DRIVER!!":GOTO 530
523 IF S<1000 THEN PRINT "MANIAC!!":GOTO 530
524 IF S<1500 THEN PRINT "AVERAGE!!":GOTO 530
525 IF S<3000 THEN PRINT "GOOD!!":GOTO 530
526 IF S<5000 THEN PRINT "EXCELLENT!!"
527 IF S>=5000 THEN PRINT "YOU MUST HAVE CHEATED!!"
530 PRINT "PLAY AGAIN?"
535 GET A$:IF A$<>"Y" AND A$<>"N" THEN 535
540 IF A$="Y" THEN 25
550 PRINT "GOOD BYE!!":END
1000 DATA 0,0,0,0,102,0,0,102,0,1,255,128,27,255,216,27,255,216,31,129,248
1010 DATA 27,0,216,27,0,216,3,129,192,3,255,192,3,255,192,3,255,192,3,255,192
1020 DATA 27,255,216,31,255,248,27,255,216,3,255,192,1,255,128,0,195,0,0,0
```

MICROBEE

Hangman for the Microbee

By Mark Giandomenico, Quirindi, QLD

IT'S THE OLD 'guess the word the computer's thinking of' game.

```
00060 REM ***** HANGMAN *****
00070 REM ** WRITTEN 13/2/83 **
00080 REM ** BY MARK GIANDOMENICO **
00090 REM *****
00095 REM
```

```
00100 CLS:PRINT
00110 PRINT "Hello and welcome to ";:UNDERLINE:PRINT"HANGMAN!";:NORMAL:PRINT"."
00120 PRINT "Do you require instructions (Y/N)?"
00130 A0$=KEY:IF A0$="" THEN 130
00140 IF A0$="Y" THEN 180
00150 IF A0$="N" THEN 230
00160 IF ASC(A0$)>64 AND ASC(A0$)<91 THEN PRINT"Press ";:UNDERLINE:PRINT"LOCK!";:NORMAL:PRINT" Key.":GOTO 130
00170 GOTO 130
00180 PRINT:PRINT "The object of HANGMAN is to guess the word I am thinking of "
00190 PRINT "before the little stick man is hung! ";:UNDERLINE:PRINT" N.B. Lower case only";:NORMAL
00200 CURS 17,8:PRINT "HIT ANY KEY TO CONTINUE"
00210 A0$=KEY:IF A0$="" THEN 210
00220 DIM V1(50)
00230 A=INT(RND*5)+1:REM Change "5" to the number of words
00240 ON A GOSUB 440,450,460,470,480:REM Add line numbers for new words here.
00250 B=LEN(Z1$)
00260 C=B
00270 CLS:CURS11,2:PRINT "MY WORD HAS "B" LETTERS"
00280 FOR X=1 TO B:POKE 61900+X,95:NEXT X
00290 CURS 10,15:PRINT "** ENTER A WORD OR LETTER **"
00300 INPUT Y1$
00310 IF Y1$=Z1$ THEN 410
00320 K=SEARCH(Z1$,Y1$):IF K=0 THEN 500
00330 FOR I=1 TO 10
00340 K=SEARCH(Z1$,Y1$,I)
00350 IF K=0 THEN NEXT+I 380
00360 CURS 13+K,B:PRINTY1$
00370 NEXT I
00380 FOR J=1 TO B
00390 IF PEEK(61900+J)=95 THEN NEXT+J 290
00400 NEXT J
00410 PRINT:PRINT "*** You got it! The word I was thinking of was "Z1$"."
00420 GOTO 730
00430 REM *** VOCABULARY ***
00440 Z1$="auditorium":RETURN
00450 Z1$="claustrophobia":RETURN
00460 Z1$="discriminate":RETURN
00470 Z1$="gauntlet":RETURN
00480 Z1$="genealogy":RETURN
00490 REM *** ADD NEW WORDS HERE ***
```

FIRST WITH DISK SOFTWARE FOR THE MICROBEE

Isn't it great, finally there is lots of MicroBee 64K Disk Systems on the Market. We just purchased our's and it's a GREAT MACHINE! So bowing to many requests . . .

HERE'S OUR RANGE OF CURRENT DISK SOFTWARE

* PLEASE NOTE: All games are non-copyable BUT are Lifetime Guaranteed

ARCADE FAVOURITES

ATEROIDS +	DISK	\$27.50
	CASSETTE	\$22.50
DEFENDER	DISK	\$27.50
	CASSETTE	\$22.50
CHOPPER	DISK	\$25.00
	CASSETTE	\$19.95
KING KONG	DISK	\$25.00
	CASSETTE	\$19.95
KILOPEDE AND GHOSTMUNCHER		
Two games, one	DISK	25.00
	CASSETTE	\$19.95
EMU JOUST	DISK	\$25.00
	CASSETTE	\$19.95
NEW 3D GAME STARSTRIKER		
Has to be seen to be believed	DISK	\$30.00
	CASSETTE	\$25.00

EDUCATIONAL

MACHINE CODE TUTORIAL		
Consists of eight interactive exercises designed to teach machine code programming and related topics as they apply to the MicroBee. Only a general knowledge of BASIC is assumed. This tutorial bridges the gap between BASIC programming and being able to understand and use machine code on your MicroBee. 'YOUR COMPUTER' said this 'I truly feel that this computer based self tutorial programme will be the standard from which others will be judged'		
	DISK	\$30.00
	CASSETTE	\$25.00
BASIC TUTORIAL		
Is a super teaching aid for any classroom. BASIC TUTORIAL is a set of nine interactive exercises designed for teaching Basic to the computer novice. No previous knowledge is assumed.		
	DISK	\$25.00
	CASSETTE	\$19.95

**MYTEK** COMPUTING
1 Kent Street, Bicton, 6157, W.A.
(09) 330 7336

FORTH

For the MicroBee

An 8K implementation of FORTH, resides at the location EDASM Preserves the ability to call basic routines.

FORTH IS MUCH MORE POWERFUL AND VERSATILE THAN BASIC AND EXECUTES NEARLY AS FAST AS MACHINE CODE.

- ☆ Graphics routines — SET, RESET, INVERT, and TEST.
- ☆ Powerful print routines.
- ☆ Supports reverse polish notation.
- ☆ Cassette routines — SAVE and LOAD.

MYTEK QUALITY DOCUMENTATION

BEFORE BUYING ANY OTHER VERSION OF FORTH — CHECK THE FEATURES.

FORTH \$42.50 ON EPROM

MICROBEE

```
00500 Q=Q+1
00510 LORES
00520 PLOT 105,7 TO 115,7:REM BASE
00530 PLOT 110,7 TO 110,35:REM POST
00540 IF Q=1 THEN 290
00550 PLOT 110,35 TO 85,35:REM ARM
00560 IF Q=2 THEN 290
00570 PLOT 86,35 TO 86,30:REM ROPE
00580 IF Q=3 THEN 290
00590 FOR I=1 TO 13
00600 PLOT 79+I,7 TO 79+I,15
00610 NEXT I
00620 IF Q=4 THEN 290
00630 PLOT 83,29 TO 89,29 TO 89,25 TO 83,25 TO 83,29
00640 PLOT 86,25 TO 86,20:PLOT 80,23 TO 92,23
00650 PLOT 84,15 TO 84,20 TO 88,20 TO 88,15
00660 CURS 10,10:PRINT"This is your last chance !!!!!!"
00670 IF Q=5 THEN 290
00680 FOR I=1 TO 13:PLOT I*7+I,15:NEXT I
00690 PLAY 4,2:4,2:4,2:7,2:6:6:4:4:3:3,4,2
00700 CURS 10,10:PRINT"You've been HUNG !!!!!"
00710 PRINT"The word was \"$1$\"."
00720 Q=0
00730 PRINT"Would you care for another try (Y/N)?";
00740 A0$=KEY:IF A0$="" THEN 740
00750 IF A0$="Y" THEN 230 ELSE END
```

Graphic Painter for Microbee

By Tony Lock, Mitcham, VIC

'Graphic Painter' is a program I designed simply because I was frustrated by the length of time it took to draw simple graphical designs on the VDU screen. If using the PLAY 0,1 function, you will not lose track of where the dot is as it will appear for 1/4 of a second before disappearing.

If you want more detailed designs, change line 3150 to read "CLS:HIRES" and change the maximum X and Y values, stated in lines 3170, 3190, 3330 and 3350, to 512 and 256 respectively. With a few simple alterations, you could even make painting diagonally possible.

```
03000 REM "GRAPHIC PAINTER" by Anthony William Lock
03010 CLS:CURS 17,1:UNDERLINE:PRINT"*** GRAPHIC PAINTER ***":NORMAL
03020 CURS 17,3:PRINT"PRINTING INSTRUCTIONS:"
03030 CURS 19,4:PRINT"To move up Press U"
03040 CURS 18,5:PRINT"To move down Press N"
03050 CURS 17,6:PRINT"To move to left Press H"
03060 CURS 16,7:PRINT"To move to right Press J"
03070 CURS 17,9:PRINT"ERASING INSTRUCTIONS:"
03080 CURS 19,10:PRINT"To move up Press E"
03090 CURS 18,11:PRINT"To move down Press X"
03100 CURS 17,12:PRINT"To move to left Press S"
03110 CURS 16,13:PRINT"To move to right Press D"
03120 CURS 20,15:PRINT"PRESS G TO START"
03130 K1$=KEY$:IF K1$="G" THEN 3150
03140 GOTO 3130
03150 CLS:LORES
03160 X=64:Y=24
03170 IF X>127 THEN LET X=127
03180 IF X<0 THEN LET X=0
03190 IF Y>47 THEN LET Y=47
03200 IF Y<0 THEN LET Y=0
03210 SET X,Y
03220 A1$=KEY$
03230 IF A1$="U" THEN LET Y=Y+1:GOTO 3170
03240 IF A1$="N" THEN LET Y=Y-1:GOTO 3170
03250 IF A1$="J" THEN LET X=X+1:GOTO 3170
03260 IF A1$="H" THEN LET X=X-1:GOTO 3170
03270 IF A1$="E" THEN LET Y=Y+1:GOTO 3320
03280 IF A1$="X" THEN LET Y=Y-1:GOTO 3320
03290 IF A1$="D" THEN LET X=X+1:GOTO 3320
03300 IF A1$="S" THEN LET X=X-1:GOTO 3320
03310 GOTO 3220
03320 IF Y<0 THEN LET Y=0
03330 IF Y>47 THEN LET Y=47
03340 IF X<0 THEN LET X=0
03350 IF X>127 THEN LET X=127
03360 SET X,Y:PLAY 0,1:RESET X,Y:GOTO 3220
```

56

Memory Dump for Microbee

By David Morrison, East Ringwood, VIC

Often it is necessary to incorporate a machine language program or lengthy data into a BASIC program. This can become a very tedious process so I have developed a procedure that PEEKs data out of memory and creates a program of BASIC DATA statements and stores it to tape. The created program can then be merged into another program by the IN #3 command.

Two subroutines are used:
320-340 A useful hexadecimal to decimal converter.
350 Peeks data out of memory.

This program can also be used to create files for PCG data if the characters are already in the PCG memory beforehand. The program will run in either the Microbee 16K or 32K standard computer.

```
00100 CLS:PRINT"BASIC MEMORY DUMPING PROGRAM":PRINT
00110 INPUT"Starting address (hex)?"A1$:GOSUB 320:A=Z
00120 IF W=-1 THEN 110
00130 INPUT"Ending address (hex)?"A1$:GOSUB 320:B=Z
00140 IF W=-1 THEN 130
00150 IF B<A THEN PRINT"ERROR":GOTO 110
00160 INPUT"Start of line numbering (dec)?"C
00170 INPUT"Increment of line numbering (dec)?"D
00180 PRINT:INPUT"Press RETURN when tape is ready?"A1$
00190 PRINT"Outputting to tape":OUT #3 ON:W=-1
00200 A1$=STR$(C):PRINT A1$(2);:C=C+D
00210 PRINT" FOR A="A;" TO="B;"READ B:POKE A,B:NEXT A;"
00220 FOR Y=0 TO 500:NEXT Y
00230 FOR Z=A TO B:IF W=0 AND POS<59 THEN 260
00240 PRINT:A1$=STR$(C):PRINT A1$(2);" DATA ";
00250 GOSUB 350:C=C+D:GOTO 270
00260 PRINT",";:GOSUB 350
00270 W=0:NEXT Z:PRINT CHR$(26):OUT #0:PRINT
00280 PRINT"Rewind tape, press RETURN to merge program,"
00290 INPUT"or type NEW to clear memory before merge."A1$
00300 PRINT"Inputting from tape":IN #3
00310 IF A1$="NEW" THEN NEW ELSE END
00320 V=1:W=0:Z=0:FOR X=LEN(A1$) TO 1 STEP -1:Y=ASC(A1$(X,X))
00330 IF Y<48 OR Y>70 OR (Y>57 AND Y<65) THEN PRINT"ERROR":W=-1:RETURN
00340 Z=Z+V*(Y-48+(Y>57)*7):V=V*16:NEXT X:RETURN
00350 A1$=STR$(PEEK(Z)):PRINT A1$(2);:RETURN
```

Asteroids for Microbee

By Denis Crowdy, Darlington, WA

This program simulates piloting in an asteroid belt followed by a trip through the space lanes. If your Microbee runs at more than 2 MHz (the colour and 64K versions) then you will have to add a delay at line 425 to bring

the program to a more playable speed.

425 FOR L=1 TO 30:NEXT L is sufficient, though you can alter the speed by changing the loop value.

```
00100 REM ASTEROIDS
00110 REM By Denis Crowdy
00120 REM May 1983
00130 CLS
00140 POKE 220,16:POKE 257,1
00150 CURS 27,7:UNDERLINE:PRINT "ASTEROIDS":NORMAL
00160 PLAY 0,0
00170 CLS
00180 REM Introduction
00190 PRINT " You are the spaceship at the top of the screen, and it is your";
00200 PRINT "Job to safely guide it through the dreaded asteroid belt..."
00210 PRINT " Once you are through however, you will find yourself to be";
00220 PRINT "stuck in the space-lanes (unfortunately heading in the wrong";
00230 PRINT "direction!!!) due to navigational malfunctions..."
00240 CURS 29,7:PRINT "<=LEFT"
00250 CURS 29,8:PRINT ">=RIGHT"
00260 CURS 21,10:PRINT "GOOD LUCK COMMANDER!!!"
00270 CURS 20,16:PRINT "HIT ANY KEY TO START...";
00280 A1$=KEY:IF A1$="" THEN 280
00290 CLS
00300 RESTORE:GOSUB 450 :REM Data for PCG
00310 PCG
00320 X=32:S=61568:C=0:B=0
00330 REM Main Section
00340 A1$=KEY:IF A1$="" THEN 380
```


MICROBEE

```
00350 IF A1$="," THEN LET N=-1
00360 IF A1$="," THEN LET N=1
00370 X=X+N:G=1
00380 CURS INT(RND*64)+1,16:IF C>2000 THEN PRINT "HI" ELSE PRINT "G"
00390 CURS X,1:PRINT " ABC "
00400 CURS X,2:PRINT " DEF ";
00410 IF G=1 THEN LET X=X+N
00420 IF PEEK(S+X)<>32 OR PEEK(S+X+1)<>32 OR PEEK(S+X+2)<>32 THEN G=1
00430 C=C+10:GOTO 340
00440 REM      Read Data for PCG
00450 FOR I= 64520 TO 64520+(16*9)-1
00460 READ D
00470 POKE I,D
00480 NEXT I
00490 FOR I=64000 TO 64015
00500 POKE I,0
00510 NEXT I
00520 RETURN
00530 REM      Data Section for PCG
00540 DATA 8,8,24,32,110,82,86,44,126,60,24,24,24,27,30,24
00550 DATA 24,24,24,32,74,110,86,44,126,60,24,36,231,0,0,0
00560 DATA 16,16,24,44,82,106,82,44,126,60,24,24,24,216,120,24
00570 DATA 24,24,30,27,24,24,16,16,16,0,0,0,0,0,0,0
```

```
00580 DATA 0,0,60,36,165,90,66,36,36,36,24,24,24,24,24
00590 DATA 24,24,120,216,24,24,8,8,8,0,0,0,0,0,0
00600 DATA 24,102,110,197,145,133,118,102,60,36,60,24,26,24,24,8
00610 DATA 1,1,1,2,66,68,68,72,73,81,225,224,255,224,224
00620 DATA 128,128,128,128,64,66,34,34,18,146,138,135,7,255,7,7
00630 RETURN
00640 REM      CRASH!
00650 CURS X,1:PRINT "A B C"
00660 CURS X,3:PRINT "D E F"
00670 FOR L=1 TO 100:OUT 2,59:OUT 2,65:NEXT L
00680 PLAY 0,2;16,2;11;10;11;13;2;11,4;15,2;16,4
00690 LORES
00700 FOR L=1 TO 50
00710 SET INT(RND*127);INT(RND*47)
00720 NEXT L
00730 CLS:NORMAL
00740 IF C>H THEN LET H=C
00750 CURS 1,1:PRINT "SCORE="C;TAB 45;"HIGH SCORE="H
00760 CURS 10,8:PRINT "Hit 'Q' to quit,any other key to continue..."
00770 A1$=KEY$:IF A1$="" THEN 770
00780 IF A1$="Q" THEN CLS:POKE 220,111:END
00790 CLS
00800 GOTO 300      REM Start all over again...
```

TANDY TRS/80 SYSTEM 80

Obesity for TRS-80 & Sharp 1211

By Claude Colle, Ingham, QLD

Given your weight (in kg), your height (in cm), your sex (M/F) and a code number (1 or 2) for a medium or large frame respectively, it will tell you if you are obese and will calculate:

- the body fat percentage
- the body surface area in square metres
- the total body water in litres.

To run it, press SHIFT S and answer the questions.

```
10:"S"PAUSE "OB
ESITY "
20:CLEAR :BEEP
1:INPUT "YOU
R WEIGHT "W
,"YOUR HEIGH
T (IN CM) "H;
H,"YOUR SEX
(M/F) "S$
30:INPUT "CODE
(1 OR 2) "C
40:L=H/E2:I=W/L
L
50:IF S$="M"
THEN 110
60:IF C=1THEN 9
0
70:IF I>29.5
THEN 160
80:BEEP 3:PRINT
"YOU ARE NOT
OBESE":GOTO
170
90:IF I>27THEN
160
100:GOTO 80
110:IF C=1THEN 1
```

```
40
120:IF I>29.9
THEN 160
130:GOTO 80
140:IF I>27.5
THEN 160
150:GOTO 80
160:BEEP 3:PRINT
"YOU ARE OBE
SE"
170:IF S$="M"LET
F=1.2811-10.
13:GOTO 190
180:F=1.481-7
190:BEEP 3:PRINT
"BODY FAT: "
;USING "##.
##";F;" %"
200:A=.007185*W^
.425+H^-.725
210:BEEP 3:PRINT
"SURF.AREA:
";USING "##.
###";A;" SQ
.M."
220:IF S$="M"LET
B=.296785W+1
9.4786L-14.0
12934:GOTO 2
40
230:B=.183809W+3
4.4547L-35.2
70121
240:BEEP 3:PRINT
"BODY WATER:
";USING "##
.###";B;" L.
":GOTO 20
( 552 BYTES )
```

Fuddle for the TRS-80

By Kim Henkel, East Benleigh. VIC

Fuddle is a computer implementation of the game Boggle. Any number of people can play, as long as they can see the screen. The program generates a 4x4 matrix of random letters. The object is to make up

as many words as possible using each letter only once. There is a time limit of 60 seconds kept by the computer. The person with the most words at the end of 60 seconds is the winner.

```
1 REM * * * * *
2 REM *      F U D D L E      *
3 REM *      KIM HENKEL 83      *
4 REM * * * * *
10 CLEAR$00:DIM L$(16),C(16)
20 CLS:GOSUB 500
25 CLS:GOSUB 200
30 PRINT$256,"";:FORT=1T04:PRINTTAB(20);H$;
PRINTTAB(20);B$;NEXT:PRINTTAB(20);VB$
100 FORP=1T04:PRINT$37+6*P,L$(P);:NEXT
105 FORP=1T04:PRINT$465+6*P,L$(P+4);:NEXT
110 FORP=1T04:PRINT$593+6*P,L$(P+8);:NEXT
115 FORP=1T04:PRINT$721+6*P,L$(P+12);:NEXT
130 FORT=60T01STEP-1:PRINT$159,T:FORTT=1T0210:NEXTTT:NEXT
135 CLS:PRINT$16,S$;:PRINT$24,T$;:PRINT$32,O$;:PRINT$40,P$;
190 PRINT$976,"DO YOU WISH TO PLAY ANOTHER GAME?";
191 Q=1009:A$=""
192 A$=INKEY$:IFA$(Q)=""THEN195ELSEPRINT$0,CHR$(143);:
FORT=1T080:NEXTT:PRINT$0,CHR$(128);:FORT=1T040:NEXT:GOTO192
195 IF A$(Q)=""THEN25ELSEEND
200 REM * * * RANDOM LETTERS * * *
205 RANDOM
210 FORN=1T016:L$(N)="":NEXT
215 FORN=1T016
220 R=RND(26)
221 FORC=1T016:IFC(C)=RTHEN220:NEXTELSENEXT
222 C(N)=R
230 L$(N)=CHR$(R+64)
240 NEXTN
250 RETURN
500 REM * * * STRING$ * * *
530 E$=CHR$(191)+STRING$(5,131):FORT=1T04:H$=H$+E$:NEXT:
H$=H$+CHR$(191)
535 E$=CHR$(191)+STRING$(5,128):FORT=1T04:B$=B$+E$:NEXT:
B$=B$+CHR$(191)
540 VB$=STRING$(25,131)
550 S$=CHR$(160)+CHR$(156)+STRING$(3,131)+CHR$(140)+CHR$(26)+
STRING$(6,24)+CHR$(130)+CHR$(141)+STRING$(3,140)+CHR$(172)+
CHR$(144)+CHR$(26)+STRING$(6,24)+CHR$(140)+STRING$(3,176)+
CHR$(142)+CHR$(129)
555 T$=CHR$(130)+STRING$(2,131)+CHR$(191)+STRING$(2,131)+
CHR$(129)+CHR$(26)+STRING$(4,24)+CHR$(191)+CHR$(26)+CHR$(24)+
CHR$(191)
560 O$=CHR$(160)+CHR$(156)+STRING$(3,131)+CHR$(172)+CHR$(144)+
CHR$(26)+STRING$(7,24)+CHR$(170)+CHR$(149)+STRING$(3,128)+
CHR$(170)+CHR$(149)+CHR$(26)+STRING$(7,24)+CHR$(130)+
CHR$(141)+STRING$(3,176)+CHR$(142)+CHR$(129)
565 P$=CHR$(170)+CHR$(151)+STRING$(3,131)+CHR$(171)+CHR$(148)+
```

TANDY TRS/80 SYSTEM 80

```

CHR$(26)+STRING$(7,24)+CHR$(170)+CHR$(157)+STRING$(3,140)+
CHR$(142)+CHR$(129)+CHR$(26)+STRING$(7,24)+CHR$(170)+
CHR$(149)
570 F$=CHR$(176)+STRING$(6,140)+CHR$(26)+STRING$(7,24)+CHR$(191)
+CHR$(26)+CHR$(24)+CHR$(191)+STRING$(3,131)+CHR$(26)+
STRING$(4,24)+CHR$(191)
575 U$=CHR$(191)+STRING$(4,128)+CHR$(191)+CHR$(26)+STRING$(6,24)
+CHR$(131)+CHR$(140)+STRING$(2,176)+CHR$(140)+CHR$(131)
580 D$=CHR$(191)+CHR$(26)+CHR$(24)+CHR$(191)+CHR$(26)+
STRING$(6,24)+CHR$(176)+CHR$(140)+STRING$(2,131)+CHR$(140)+
CHR$(191)+CHR$(26)+STRING$(6,24)+CHR$(131)+CHR$(140)+
STRING$(2,176)+CHR$(140)+CHR$(191)
584 NL$=CHR$(26)+CHR$(24)
585 L$=CHR$(191)+NL$+CHR$(191)+NL$+CHR$(191)+NL$+CHR$(191)
590 E$=CHR$(188)+STRING$(4,179)+CHR$(188)+CHR$(26)+STRING$(6,24)
+CHR$(143)+STRING$(4,176)+CHR$(140)
595 FORT=1TO200:NEXTT:PRINT@325,F$;GOSUB@620:PRINT@462,U$;
GOSUB@620:PRINT@349,D$;GOSUB@620:PRINT@359,D$;GOSUB@620:
PRINT@366,L$;GOSUB@620:PRINT@500,E$;
600 PRINT@975;"PRESS ANY KEY TO BEGIN PLAY...";
610 A$=INKEY$;IF A$="" THEN RETURN ELSE PRINT@1005,CHR$(143);:FORT=
1TO80:NEXTT:PRINT@1005,CHR$(128);:FORT=1TO40:NEXTT:GOTO@610
620 FORT=1TO500:NEXTT:RETURN

```

Program Generator for TRS-80 Model 1/111

By Craig Fisher, Hawker, ACT

PROGGEN is a program to make typing in programs from listings easy, quick and with fewer errors.

When you run the program you will be asked to type in two phrases (such as keywords not already included), which can be put into program lines by pressing just one button, the right arrow or the down arrow. Next you must type in the name of the program. After that PROGGEN will ask you if you want automatic line numbering or not. If the program you are going to type in has regular line numbers then type 'Y' or 'y', otherwise press ENTER.

If you use the line numbering you will next be asked for the first line number and then the line number increment. If the program starts at line 10 and goes up by 10s you can just press ENTER in answer to these questions. When you are ready to key in the program,

press ENTER. The screen will then clear and you will see the basic keywords displayed in the top half of the screen next to the key you must press for them.

For the phrases you type in at the beginning you press the down arrow or the right arrow. Press the left arrow to back-space over characters. If you really mess up a line just press the CLEAR key and you can start it again. When you have finished typing in a line press ENTER; you will then be asked if there is another line to come. If there is, press ENTER, and you can then type in the next line. If there isn't or you don't want to do any more typing for the moment type 'N' or 'n'. When you type the rest of the program use a different name for it.

If an error occurs a message will appear at the bottom of the screen.

```

10 ' *****
15 ' *****      PROGGEN      *****
20 ' *****      PROGRAM GENERATOR      *****
30 ' *****      Copyright      *****
40 ' *****      April 1983      *****
50 ' *****
60 ' ***** BY: Craig Fisher *****
70 ' *****
150 '
160 CLS
162 CLEAR1000
165 ON ERROR GOTO 350
170 DIM WD$(27)
180 AU=0: CX=0: Z=0: AN$="": ZZ=0: DI$="": PN$="": QU=0: LN=10: IN=10: N$="":
LN$="": SK$=CHR$(10)+CHR$(9): IN$="": MN=0
190 FOR ZZ=0TO25: READ WD$(ZZ): NEXT
58

```

210 PRINT TAB(19)"PROGGEN - Program Generator"

220 PRINT " This program will enable you to type in keywords using only two keys. This is done by typing a letter while holding down shift (with a lowercase driver).";

222 PRINT "It will also number the program lines unless they are irregular. To erase the line you are typing press the clear key. Two keys can be assigned any phrases, these are the right and down";

230 PRINT " arrows. To get the phrases you have designated them just press that key. Each line will be saved on disk as you enter it."

240 PRINT: LINE INPUT "Programmable key phrases, No.1:"; WD\$(26): LINE INPUT "No.2:"; WD\$(27): LINE INPUT "Program name:"; PN\$

245 INPUT "Automatic line numbering "; AN\$: IF INSTR("Yy", LEFT\$(AN\$, 1)) THEN INPUT "First line No.:"; LN: INPUT "Increment:"; IN: ELSE AU=1

250 OPEN "O", 1, PN\$

260 LINE INPUT "Press enter when ready to type program "; AN\$

265 CLS: PRINT STRING\$(64,140);: FOR ZZ=0TO27: PRINT CHR\$(ZZ+65) " --"

"WD\$(ZZ),,: NEXT: POKE 15840,94: PRINT @512, STRING\$(64,131)

270 QU=0: PRINT @578, STRING\$(LEN(LN\$),32) " ": IF AU=0 THEN LN\$=STR\$(LN

)+" " ELSE LN\$=""

280 PRINT @578, LN\$

290 IN\$=INKEY\$: IF IN\$="" THEN 290 ELSE IF IN\$=CHR\$(8) THEN 320 ELSE IF

IN\$=CHR\$(13) THEN 330 ELSE IF (IN\$>"A" AND IN\$<"Z" AND QU=0) THEN LN\$=L

N\$+WD\$(ASC(IN\$)-65) ELSE IF IN\$=CHR\$(31) THEN GOTO 270 ELSE IF INSTR(SK

\$,IN\$) THEN 340 ELSE LN\$=LN\$+IN\$

300 IF IN\$<>CHR\$(134) AND IN\$<>" " THEN 310 ELSE IF QU=0 THEN QU=1 ELSE IF Q

U=1 THEN QU=0

310 PRINT @578, LN\$+CHR\$(143)+" " : GOTO 290

320 IN\$=RIGHT\$(LN\$,1): LN\$=LEFT\$(LN\$,LEN(LN\$)-1): GOTO 300

330 PRINT @578, LN\$ " ": PRINT @578, LN\$: INPUT "Another line"; AN\$: IF LEN(

AN\$)>0 AND INSTR("Nn", LEFT\$(AN\$,1)) THEN CLOSE: ENDELN=LN+IN: PRIN

T @578+LEN(LN\$), " " : GOTO 270

340 IF IN\$=CHR\$(10) THEN LN\$=LN\$+WD\$(27): GOTO 310 ELSE LN\$=LN\$+WD\$(2

6): GOTO 310

350 IF ERR=28 THEN PRINT @965, "Line too long.": FORMW=0TO33: NEXT: PR

INT @965, STRING\$(16,32);: RESUME 310 ELSE IF ERR=8 THEN PRINT @965, "Past

line start.": FORMW=0TO344: NEXT: PRINT @965, STRING\$(16,32);: RESUME

310

352 IF ERR=122 THEN PRINT @965, "No room on disk": CLOSE: END

354 FOR CX=960TO1017: PRINT @CX, "ERROR.": FOR Z=0TO9: NEXT Z: PRINT @CX,

" " : NEXT CX: CLOSE: END

355 REM Keywords for each alphabetic character

360 DATA AND, GOTO, "CLS:", DATA, ELSE, FOR, GOSUB, CLEAR, INPUT, INKEY\$,

INSTR(, LEFT\$(, MID\$(, NEXT, RND(, PRINT, SET(, RIGHT\$(, STRING\$(, THEN, C

HR\$(, POKE, RESET(, READ, RETURN, PEEK(

Balloon Bomber for TRS-80 Models 1 & 111

By Graham Beland, Black Rock, VIC

This is a single-player game where you are in a balloon trying to bomb escaped prisoners. Your balloon was tied to the ground but the rope broke. You have no control over your craft, making it harder to aim.

You have 20 shots, which

look like a lower case 'O'. The bombs drop straight down, but the cars at the bottom move very quickly. The space bar is used to drop a bomb. The game includes sound effects through the cassette port.

```

1 CLEAR1000
2 CLS:GOSUB7000:CLS
10 REM- "Balloon Bomber" made by Graham N. Beland. For TRS-80 model I
& III. Finished in 13/8/82.
15 AS=" "CHR$(176)+CHR$(140)+CHR$(131)+CHR$(131)+CHR$(140)+
CHR$(140)+CHR$(176)+ " "
16 BS=" "CHR$(150)+ " "CHR$(169)+ " "
17 CS=" "CHR$(130)+CHR$(140)+CHR$(176)+CHR$(176)+ " "CHR$(176)+CHR$(176)+CHR$
(140)+CHR$(129)+ " "
18 DS=" "CHR$(131)+CHR$(191)+CHR$(131)+ " "
19 ES=" "CHR$(183)+CHR$(191)+CHR$(187)+ " "
20 BP=90
22 PRINT@960,STRING$(63,191);
25 GOSUB5000
40 R=RND(3):RANDOM
50 IFR=1THENBP=BP-1:IFBP<63THENBP=BP+2
70 IFR=3THENBP=BP+1:IFBP>114THENBP=BP-2
80 GOSUB1000
90 IFPEEK(14400)=128ANDKE=0THENKE=1:EE=9:DE=BP+325-64:AM=AM+1:GOSUB5000
100 IFKE=1THENGOSUB2000:IFAM=20ANDKE=0THENGOTO10000
110 IFSH=0THENGOSUB3000
120 GOSUB4000:UPDATE THINGS POS.
130 GOTO40
1000 PRINT@BP,AS;PRINT@BP+63,BS;PRINT@BP+127,CS;PRINT@BP+192,DS;PRINT@BP+256
,ES;
1810 RETURN
2000 PRINT@DE," ";DE=DE+64:IFDE=>1022THENDE=0:KE=0:PRINT@960,STRING$(63,191);:R
ETURN:ELSE:PRINT@DE,"o";:FORT=0TOEE:OUT255,2:OUT255,0:NEXT:EE=EE-1
2010 IFDE=BL+1RNDDE<BL+3THENPRINT@DE," ";:PRINT@BL,CHR$(RND(64)+128)+CHR$(RND(
64)+128)+CHR$(RND(64)+128)+CHR$(RND(64)+128)+CHR$(RND(64)+128)+CHR$(RND(64)+128)
;:FORT=1TO5:FORT=1TO2:OUT255,2:OUT255,0:NEXTT.T1:DE=0:KE=0:KI=KI+1:GOSUB5000:RE
TURN:ELSERETURN
3000 BL=950:SH=1:SHS=CHR$(140)+CHR$(175)+CHR$(159)+CHR$(143)+CHR$(191)+CHR$(140)
+" ":RETURN
4000 BL=BL-2:PRINT@BL,SHS;:IFBL<900THENPRINT@BL," "SH=0:RETURN:ELSE:R
ETURN
5000 PRINT@0,"You have bombed ";KI;" cars. You have ";20-AM;" shots left. ";:IFA
M=21THENDELSERETURN
7000 PRINT " BALLOON BOMBER"
7010 PRINT "-----"
7020 PRINT " This is a single Player game where you are in a balloon which has r
ecently got out of control. Your mission is to destroy the"
7030 PRINT"escaped Prisoners, they have no hostages, so have no pity."
7040 PRINT"You have 20 bombs- do the best you can."
7050 PRINT" OR ELSE!"
7060 PRINT:PRINT"To drop a bomb Press the space bar."
7070 PRINT
7080 PRINT"This Program has sound so take your aux Plug and insert it into
7090 PRINT"your 'aux in' on your radio."
7100 PRINT "-----"
7110 PRINT"Press any key to begin."
7120 IS=INKEY$:IFIS=""THEN7120
7130 RETURN
10000 FORT=1TO500:NEXT:CLS:PRINT"Your bomb supply is exhausted."
10010 PRINT"Your score is ";KI
10040 INPUT"Press ENTER to start.";DS
10050 RUN

```

APPLE

Supermaze for Apple

By Martin Donnon, Rostrevor, SA

This program is the base of my adventure game, the maze. It makes use of the Apple's low-resolution graphics. The program can really be appreciated by Apple users who have colour. The program will pick one random colour for maze and take one from that number and draw the border in that colour.

The actual maze when run is quite complex but has one major flaw, running speed.

I added a storing device that stores the maze on the second hi-res page and can be accessed by a certain call or POKE. This feature should only be used with longer adventures.

```

10 REM *****SUPER-MAZE*****
20 REM *BY*
30 REM ***MARTIN DONNON***
40 HOME
50 DEF FN R(Z) = INT ( RND (Z)
* 40):C = INT ( RND (1) *
15) + 1
60 VTAB 23: HTAB 13: INVERSE : PRINT
"GENERATING MAZE": NORMAL
70 GR
80 COLOR= C: FOR Z = 0 TO 39
90 HLIN 0,39 AT Z
100 NEXT :X = 1:Y = 1

```

```

110 COLOR= C - 1: HLIN 0,39 AT 0
: HLIN 0,39 AT 39: VLIN 0,39
AT 0: VLIN 0,39 AT 39
120 COLOR= 0
130 GOSUB 340:Q = 0: FOR Z = 1 TO
4: IF H(Z) = 0 THEN Q = Q +
1
140 NEXT : IF Q > 2 THEN GOSUB
350
150 ON INT ( RND (1) * 6) + 1 GOTO
180,220,260,300,220,300
160 M = M + 1: IF M < 900 THEN 13
0
170 GOTO 400
180 F = FN R(1): IF Y - F < 2 THEN
130
190 FOR Z = Y - 1 TO Y - F STEP
- 1: IF SCRN( X - 1,Z) = 0
OR SCRN( X + 1,Z) = 0 THEN
380
200 NEXT
210 VLIN Y,Y - F AT X:Y = Y - F:
GOTO 360
220 F = FN R(1): IF X + F > 37 THEN
130
230 FOR Z = X + 1 TO X + F: IF SCRN(
Z,Y - 1) = 0 OR SCRN( Z,Y +
1) = 0 THEN 380
240 NEXT
250 HLIN X,X + F AT Y:X = X + F:
GOTO 360
260 F = FN R(1): IF F + Y > 38 THEN
130
270 FOR Z = Y + 1 TO Y + F: IF SCRN(
X - 1,Z) = 0 OR SCRN( X + 1
,Z) = 0 THEN 380
280 NEXT
290 VLIN Y,Y + F AT X:Y = Y + F:
GOTO 360
300 F = FN R(1): IF X - F < 2 THEN
130
310 FOR Z = X - 1 TO X - F STEP
- 1: IF SCRN( Z,Y - 1) = 0
OR SCRN( Z,Y + 1) = 0 THEN
380
320 NEXT
330 HLIN X,X - F AT Y:X = X - F:
GOTO 360
340 H(1) = SCRN( X,Y - 1):H(2) =
SCRN( X + 1,Y):H(3) = SCRN(
X,Y + 1):H(4) = SCRN( X - 1
,Y): RETURN
350 X = INT ( RND (1) * 35) + 2:
Y = INT ( RND (1) * 35) + 2
: PLOT X,Y: RETURN
360 T = 0: GOTO 160
370 GOTO 130
380 T = T + 1: IF T 10 THEN T =
0: GOSUB 350

```



```

370 GOTO 130
400 VTAB (22): PRINT TAB( 14)"S
    TORING MAZE": FOR Z = 0 TO 1
    024:X = PEEK (1024 + Z): POKE
    16432 + Z,X: NEXT
410 END

```

Graphing Straight Lines for the Apple II

By V. Zalakos, Galston, NSW

This program was written to illustrate the graphic capabilities of the Apple II+ personal computer.

The program demonstrates straight lines graphed on a pair of axes of variable division length.

When commencing the program the computer requests the user to supply this information: gradient of line; Y-intercept of the line; and the division spacing that the user would like on the axes.

The graphics page is then swapped for the text and plotting commences.

At the completion of graphing the user is asked if he wishes to continue. If he does he is then asked if he wishes to clear the screen. If he does an HGR command is executed and the cycle is then repeated. If however he does not wish to clear the screen the cycle is just repeated.

The program may be simply changed to plot parabolas (or any other curve for that matter). For parabolas change these lines:

```

1040 PRINT "PLOTING
CURVES IN THE FORM Y=AX
2 + BX + C" 1050
PRINT:PRINT
1060 INPUT "VALUE FOR A
";A
1070 INPUT "VALUE FOR B
";B

```

```

1 REM *****
2 REM * GRAPHING UTILITY FOR *
3 REM * THE APPLE II *
4 REM * WRITTEN BY V.ZALAKOS *
5 REM *****
10 HOME
20 PRINT "DO YOU WANT INSTRUCTIONS ";
30 GET AS: IF AS = "N" THEN 1000
40 HOME
50 PRINT SPC( 14);"INSTRUCTIONS": PRINT
60 PRINT "THE PROGRAM IS DESIGNED TO GRAPH "
70 PRINT SPC( 10);"STRAIGHT LINES."
80 PRINT : PRINT
90 PRINT "THE COMPUTER WILL ASK FOR FOUR PIECES OF"
100 PRINT "INFORMATION:"
110 PRINT SPC( 12);"(1) THE GRADIENT OF THE LINE"
120 PRINT SPC( 12);"(2) THE Y-INTERCEPT"
125 PRINT
130 PRINT SPC( 12);"(3) THE DIVISIONAL SPACING"
135 PRINT : PRINT
140 PRINT "THE COMPUTER WILL THEN SET ABOUT":
PRINT SPC( 9);"PLOTING YOUR GRAPH"
60

```

```

1075 INPUT "VALUE FOR C
";C
1110 K=B:RB=C#S
1280/1360 Y=(A#X#X)
=(B#X)+C
HINT: Use small values for A, B
and C for best results, for
example 0.004

```

If you find you have a favourite graph you would like to save, the procedure is quite simple (if you have a disk drive for your Apple).

i) BOOT DOS
ii) RUN GRAPHS (or whatever you called your programs)
iii) DELETE the lines 1410-1470 (these ask if you wish to continue)

iv) RUN the program using the co-ordinates for the particular graph.

v) Once the program has stopped type NEW

vi) You should have the graph on the screen with no program in memory

vii) now type BSAVE<filename>,A8192,L8192

viii) When the drive has ceased activity type TEXT

ix) Type CATALOG
x) You should have a file:
B 032 MY FAVOURITE GRAPH

To view your file you must put the Apple into the HGR mode.

i) Now type BLOAD filename
ii) You should now see your graph on the screen.

```

150 VTAB (23): PRINT "HIT ANY KEY..."
200 WAIT ( - 16384),128
1000 CLEAR
1010 XX = 79:XY = 81:YX = 139:YY = 141
1020 HOME : HGR : TEXT : HOME
1030 HOME : TEXT : HOME
1040 PRINT "GRAPHING STRAIGHT LINES IN THE FORM":
PRINT SPC( 15);"Y=MX+B"
1050 PRINT : PRINT
1060 INPUT "WHAT IS THE GRADIENT (M) ";M
1070 INPUT "WHAT IS THE Y-INTERCEPT (B) ";B
1080 IF V = 2 THEN 1110
1090 INPUT "WHAT SPACING DO YOU WANT ON THE AXES ";S
1100 PRINT "DO YOU WANT EACH DIVISION TO BE 1 UNIT OR ";
S;" UNITS APART ";: INPUT P: IF P = S THEN RB = B:
GOTO 1120
1110 RB = B * S
1120 POKE - 16304,0: POKE - 16297,0
1130 :
1140 REM **SET AXIS COLOURS**
1150 :
1160 HCOLOR= 3
1170 IF V = 2 THEN 1190
1180 GOSUB 1510
1190 HOME : VTAB 22: PRINT "THE GRAPH IS Y=";M;"X+";B
1200 :
1210 REM **PRINT EQUATION**
1220 :
1230 HCOLOR= 1
1240 :
1250 REM **PLOT FIRST POINT**
1260 :

```

```

1270 FOR X = - 140 TO 139
1280 Y = M * X + RB
1290 IF 80 - Y < 0 OR 80 - Y > 159 THEN 1310
1300 HPLOT X + 140,80 - Y:X = 0: GOTO 1350
1310 NEXT X
1320 :
1330 REM **PLOT REST OF POINTS USING HPLOT TO**
1340 :
1350 FOR X = - 140 TO 139
1360 Y = M * X + RB
1370 IF 80 - Y < 0 OR 80 - Y > 159 THEN 1390
1380 HPLOT TO X + 140,80 - Y
1390 NEXT X:
1400 POKE - 16300,0
1410 VTAB 24: PRINT "ANOTHER GRAPH ";: GET AS
1420 PRINT
1430 IF AS = "N" THEN 1470
1440 PRINT "CLEAR THE SCREEN ";: GET AS
1450 IF AS = "N" THEN V = 2: GOTO 1030
1460 V = 0: HOME : HGR : HOME : GOTO 1030
1470 HOME : TEXT : HOME : END
1480 :
1490 REM **PLOT Y-AXIS**
1500 :
1510 HPLOT 0,80 TO 279,80
1520 :
1530 REM **PLOT Y-AXIS**
1540 :
1550 HPLOT 140,0 TO 140,159
1560 :
1570 REM **PLOT 'X'**
1580 :
1590 HPLOT 144,2 TO 148,7 TO 152,2
1600 :
1610 REM **PLOT 'Y'**
1620 :
1630 HPLOT 148,7 TO 148,12
1640 HPLOT 269,85 TO 277,95: HPLOT 269,95 TO 277,85
1650 S = ABS (S)
1660 XS = 0:F = 0
1670 FOR AA = 140 TO 279 STEP S
1680 IF AA > 279 OR AA < 0 THEN 1800
1690 HPLOT AA,XX TO AA,XY
1700 AB = AA - 2 * XS * S
1710 HPLOT AB,XX TO AB,XY
1720 IF F = 2 THEN 1780
1730 AC = AA - 60
1740 IF AC < 0 OR AC > 159 THEN F = 2: GOTO 1780
1750 HPLOT YX,AC TO YY,AC
1760 AD = AC - 2 * XS * S
1770 HPLOT YX,AD TO YY,AD
1780 XS = XS + 1
1790 IF AA < 279 - S THEN NEXT AAELSE550
1800 GOTO 1190

```


APPLE

,208,245,104,76,228,65,104,24,105,35,208,228,
76,154,65
600 DATA 24,72,105,2,168,177,4,41,15,201,4,240,11,169,255,160,0,145,4,200,145,
4,104,96,104,168,177,4,72,200,177,4,160,5,145
.2,104,136
610 DATA 145,2,165,3,164,2,32,217,3,144,3,76,50,66,160,12,177,4,72,200,177,4,1
60,5,145,2,104,136,145,2,165,3,164,2,32,217,3
.176,1,96
620 DATA 169,255,160,3,145,4,136,145,4,96,0,0,0,0,0

SHARP & TANDY PCs

Menstruation Forecast and Contraception for the Sharp PC

By Claude Colle, Ingham, VIC

This program will forecast the date of the next menstruation cycle and, given a date within a cycle, will tell whether conception is possible or not likely.

It is supposed that no conception is possible 12 days or less before the next expected menstruation date (Ogino method).

First input the last 11 menstruation dates using label 'D'. Save this data using label 'S' (make sure tape is ready in cassette).

Then whenever you want to use the program, load it and use label 'L' to load the data. Enter the new date using label 'N'. This is done to update the data, since the forecast is related to the average of the last 10 differences of the menstruation dates. Label 'F' will show you the forecast and label 'C' is used for contraception.

Warning: Since this program is based on the Ogino method it is not 100 per cent safe to use as a contraception method.

```

10:"D"PAUSE "DA
TA":CLEAR :A
=365.25:B=30
.6001
20:FOR I=1TO 10
30:BEEP 1:INPUT
"DATE ";D;"M
ONTH ";M;"YE
AR ";Y:USING
:PRINT D;"/"
:M;"/"Y
40:IF M<3LET Y=
Y-1:M=M+12
50:M=M+1
60:IF Z=1THEN 8
0
70:C=INT (AY)+
INT (BM)+D:Z
=1:GOTO 90
80:E=INT (AY)+
INT (BM)+D:Z
=0
90:IF E=0THEN 3
0
100:F=ABS (E-C):
G=G+F:H=G/I:
L=H+.05
110:BEEP 3:USING
"###.#":
PRINT "MEAN=
":L:NEXT I:
IF M>12LET M
=M-12:Y=Y+1
120:"S"BEEP 3:
PRINT "SAVE
DATA ON TAPE
"
130:PRINT #"DATA
":END
140:"L"PRINT "LO
AD DATA FROM
TAPE"
150:BEEP 1:INPUT
#"DATA":END
210:"N"PRINT "EN
TER NEW DATE
":PRINT " "
220:BEEP 1:INPUT
"DATE ";D;"M
ONTH ";M;"YE
AR ";Y:USING
:PRINT D;"/"
:M;"/"Y
230:IF M<3LET Y=
Y-1:M=M+12
240:M=M+1
250:IF Z=1THEN 2
70
260:C=INT (AY)+
INT (BM)+D:Z
=1:J=C:GOTO
280
270:E=INT (AY)+
INT (BM)+D:Z
=0:J=E
280:I=I+1:F=ABS
(E-C):G=G+F:
H=G/I:L=H+.0
5
290:BEEP 3:USING
"###.#":
PRINT "MEAN=
":L:GOTO "S
"
```

SHARP & TANDY PCs

```

300:"F"PRINT "FO
RECAST":M=M-
1:IF M>12LET
M=M-12:Y=Y+1
310:BEEP 1:USING
:PRINT D;"/"
:M;"/"Y:J=J
+H
320:Y=INT ((J-12
2.1)/A):K=
INT (YA):M=
INT ((J-K)/B
)
330:D=INT (J-K)-
INT (MB)
340:IF M>=14LET
M=M-12
350:M=M-1
360:IF M<3LET Y=
Y+1
370:GOTO 310
400:"C"PRINT "CO
NTRACEPTION"
410:BEEP 1:INPUT
"DATE ";R;"M
ONTH ";S;"YE
AR ";T:PRINT
" ":PRINT R:
"/";S:"/"T:
":
420:IF S<3LET T=
T-1:S=S+12
430:S=S+1
440:Q=INT (AT)+
INT (BS):R:
IF Z=1LET P=
C:GOTO 460
450:P=E
460:Q=Q-P
470:IF Q<5THEN 5
00
480:IF Q>=(INT H
-12)THEN 510
490:BEEP 3:PRINT
"CONCEPTION
POSSIBLE.":
GOTO 410
500:BEEP 3:PRINT
"MENSTRUATIO
N DAY":GOTO
410
510:BEEP 3:PRINT
"CONCEPTION
NOT LIKELY.
":GOTO 410
(1083 BYTES)

```

SAMPLE RUN

27./8./1982.
20./9./1982.
MEAN= 24.0
16./10./1982.
MEAN= 25.0
10./11./1982.
MEAN= 25.0

5./12./1982.
MEAN= 25.0
30./12./1982.
MEAN= 25.0
25./1./1983.
MEAN= 25.2
20./2./1983.
MEAN= 25.3
17./3./1983.
MEAN= 25.3
12./4./1983.
MEAN= 25.3
9./5./1983.
MEAN= 25.5

SAVE DATA ON TAP
E

ENTER NEW DATE

2./6./1983.
MEAN= 25.4
SAVE DATA ON TAP
E

FORECAST

2./6./1983.
27./6./1983.
22./7./1983.
17./8./1983.
11./9./1983.

CONTRACEPTION

6./6./1983.:
MENSTRUATION DAY
7./6./1983.:
CONCEPTION POSSI
BLE.

14./6./1983.:
CONCEPTION POSSI
BLE.

15./6./1983.:
CONCEPTION NOT
LIKELY.

26./6./1983.:
CONCEPTION NOT
LIKELY.

Dashboard Computer for the Sharp PC

By Claude Colle, Ingham, VIC

This program can be used when you undertake a long trip! With the Pocket Computer it is

SHARP & TANDY PCs

very useful since you can carry it with you in the car.

At the end of your trip you will know the distance travelled, the duration of the trip (including stops), the stopping time, the driving time, the average speed in km/h, the quantity of petrol used in litres, the average consumption of petrol in litres per 100 km, the total cost of petrol and the average cost of petrol in dollars per 100 km.

Pressing SHFT D to start, enter the destination (T\$ and U\$ are used if the name of the town has more than seven characters), the date (N\$ and Y\$ if more than seven characters), the departure time in h/m/s, the odometer reading in km.

DASHBOARD COMPUTER

```
10:"D"PAUSE "DA
SHBOARD COMP
UTER":CLEAR
12:PRINT "T R I
P T O "
:PRINT " "
14:BEEP 1:INPUT
"DESTINATION
":T$,U$:
PRINT T$:U$:
PRINT " "
16:BEEP 1:INPUT
"DATE ";N$,Y
$:PRINT "DAT
E : ";N$:Y$:
20:BEEP 1:INPUT
"DEPARTURE T
IME: ";D,"CO
UNTER READIN
G: ";K
30:D=DEG D:END
40:"S"PAUSE "ST
OPS":BEEP 1
50:INPUT "STOP
TIME: ";E,"P
ETROL: ";P,"
PETROL COST:
";A,"START
TIME: ";F
60:E=DEG E:F=
DEG F:Q=Q+P:
B=B+A
70:C=F-E:G=G+C:
END
80:"A"BEEP 1:
INPUT "TIME
OF ARRIVAL:
";H,"COUNTER
READING: ";
L,"PETROL: "
;P,"COST: ";
A
85:Q=Q+P:B=B+A:
```

During the trip, every time you stop, using SHFT S, enter the time when you stopped in h/m/s, the quantity of petrol (if you put any in) in litres, the amount you paid for petrol, the departure time.

At the end of your trip, fill the tank and press SHFT A to enter the time of arrival, the odometer reading, the quantity of petrol needed to fill the tank, the amount you paid for petrol.

If the printer is connected and ON, you will get all the answers printed. If you have no printer, press ENTER after each display to obtain the results.

Bon Voyage!

```
I=H-D:J=I-G:
M=L-K
90:S=M/J:Q=Q/M*
100:R=B/M*10
D
100:BEEP 3:USING
:PRINT "DIST
ANCE: ":
PRINT M;" KM
"
110:PRINT "TRIP
TIME: ":
PRINT I;" HR
S"
120:PRINT "STOPS
TIME: ":
PRINT G;" HR
S"
130:PRINT "DRIVI
NG TIME: ":
PRINT J;" HR
S"
140:USING "####.
#":PRINT "AV
. SPEED: ":
PRINT S;" KM
/H"
150:PRINT "PETRO
L USED: ":
PRINT Q;" L.
"
160:PRINT "AV. C
ONSUMPTION:"
;Q;" L./100K
M"
170:USING "####.
#":PRINT "P
ETROL COST:
":PRINT " $";
B
180:PRINT "AV. C
OST:":PRINT
"$";R;" /100
KM"
190:END
```

(741 BYTES)

T R I P T O

MOUNT-ISA

DATE : 5/10/1982
DISTANCE:
1033. KM
TRIP TIME:
11. HRS
STOPS TIME:
0.5 HRS
DRIVING TIME:
10.5 HRS

AV. SPEED:
98.3 KM/H
PETROL USED:
124.0 L.
AV. CONSUMPTION:
12.0 L./100
PETROL COST:
\$ 59.36
AV. COST:
\$ 5.74/100 KM

VIC 20

Alien for Vic-20

By S. Jones, Holder, ACT

The object of the game is to stop the falling aliens from landing. The top scorer's name and

score can be put on line 1. The program contains simple colour graphics and sound.

```
1 TS$="S. JONES":TS=558
5 POKE36879,238
10 PRINT "J";
15 PRINTTAB(5);"#### ALIEN ####"
20 PRINT:PRINT:PRINT:PRINT"WRITTEN BY SIMON JONES":FORI=1TO3888:NEXTI
25 PRINT"DO YOU REQUIRE INSTRUCTIONS (Y OR N) ?"
30 GETA$:IFA$="Y"THEN38
35 IFA$="Y"THEN45
40 GOTO75
45 PRINT"J":PRINTTAB(5);"#### ALIEN ####":PRINT:PRINT:
46 PRINT"YOUR MISSION IS TO DESTROY THE INVADING";
50 PRINT"ALIENS THAT FALL FROM THE SKY. THE MOREALIENS ";
55 PRINT"YOU DESTROYTHE FASTER ";
60 PRINT"THEY FALL.":PRINT:PRINT"THE # KEY MOVES YOULEFT. ";
65 PRINT"THE # KEY MOVESYOU RIGHT. ";
70 PRINT" THE#SPACE BAR# FIRES."
75 PRINT:PRINT"LEVEL OF DIFFICULTY (0-9)":INPUTD
76 PRINT"TOP SCORE-":PRINTTS$,TS
80 PRINT:PRINT"HIT ANY KEY TO START GAME":POKE198,0:WAIT198,1:POKE198,0
85 S=0:V=15:E=1
90 PRINT"J":PRINTCHR$(142):PRINT"SCORE-":V=36878:S1=36876:S2=36877:POKEV,15
95 FORI=1TO22:POKE8163+I,102:POKEQ,5:NEXTI
100 SC1=8153:AL1=7782+INT(RND(1)*22)
105 POKESC1,32:POKE38720+SC1,0:POKEAL1,32:POKE38720+AL1,0:POKEV,15
110 POKES1,199
115 B=INT(RND(1)*4):IFB=1THENAL1=AL1+1
120 IFB=2THENAL1=AL1-1:IFAL1<7680THENAL1=7680
125 IFB=2THENAL1=AL1+23
130 IFAL1>8141THENGOTO165
135 C=PEEK(197):IFC=45THENSCL=SC1-1:IFSC1<8142THENSCL=8142
140 IFC=22THENSCL=SC1+1:IFSC1>8163THENSCL=8163
145 IFC=32THEN218
150 POKESC1,30:POKESC1+38720,0:POKEAL1,81:POKEAL1+38720,0
155 FORJ=1TO10:(D-E):NEXTJ
160 POKES1,0:GOTO185
165 POKE198,0:PRINT"J":PRINT"THE ALIENS HAVE LANDED"
170 POKEV,0:POKES1,0:POKES2,0
175 PRINT:PRINT"YOUR SCORE WAS ";S
180 IFT$<STHENPRINT:PRINT"YOU GOT TODAY'S TOP SCORE":TS=S:PRINT:INPUT"NAME":TS
$
185 PRINT:PRINT"DO YOU WANT TO PLAY AGAIN (Y OR N) ?"
190 GETB$:IFB$="Y"THEN198
195 IFB$="N"THEN240
200 IFB$="Y"THEN75
205 GOTO190
210 L=SC1-22:POKES1,238
212 POKESC1,30:POKESC1+38720,0:POKEAL1,81:POKEAL1+38720,0
215 L=L-22:IFL<7680THENPOKES1,0:GOTO185
220 IFL=AL1THENPOKEL,42:POKE38720+AL1,2:POKES1,0:S=S+10:PRINT"##":TAB(6):S:POKES2,220:GOTO238
225 GOTO215
230 FORI=1STOSTEP-1:POKEV,I:FORV=1TO250:NEXT:NEXT:POKES2,0:POKEL,32:POKES1,0:POKESC1,32
235 E=INT(S/50):GOTO180
240 END
```

READY.

Shoot-em-up for Vic-20

By Mark Wilkinson, Somerville VIC

THIS PROGRAM is an arcade game written for the unexpanded VIC-20 with standard Atari-type joystick.

VIC 20

After the program is typed in it should be saved before running, as it contains machine code routines and any error in these routines will cause the computer to crash. At the start

of each game you must enter a skill level (1 to 9). After that you have four launchers with which to destroy as many aliens as possible, gaining ten points per alien destroyed.

```
10 POKE 56,28:POKE 52,28:CLR
20 GOSUB 900
40 X=X+DX:IF X<0 OR X>21 THEN X=X-DX
50 POKE S+X,4:POKE C+X,7
60 IF RND(1)>SK THEN GOSUB 200
69 POKE 0,0
70 SYS 828:SYS 7432:SYS 7461
71 Q=PEEK(0):IF Q>0 THEN POKE 36877,168:SC=SC+10*Q
75 IF PEEK(S+X)>4 THEN 300
80 DX=0:IF (PEEK(P)AND16)=0 THEN DX=-1
84 POKE 0,0
85 SYS 7502:SYS 828:SYS 7502
86 Q=PEEK(0):IF Q>0 THEN POKE 36877,168:SC=SC+10*Q
90 IF (PEEK(P1)AND128)=0 THEN DX=1
94 POKE 36877,0:POKE 36874,0
95 IF (PEEK(P)AND32)>0 THEN Z=0
96 IF (PEEK(P)AND32)=0 AND Z=0 THEN POKE S+X-22,3:POKE C+X-22,3
:Z=1:POKE 36877,200
97 IF DX<>0 THEN POKE 36874,200
99 PRINT "(HOME) (DWN) (RVS) (YEL) "SC,HT
100 POKE S+X,32:SYS 7502:GOTO 40
200 R=INT(RND(1)*9)+1:IF PEEK(900+R)=0 THEN POKE 900+R,1
210 RETURN
300 POKE 36877,138:POKE 36874,0
310 FOR J=255 TO 8 STEP-1:POKE 36879,J:NEXT
320 POKE 36877,0
330 HT=HT+1:IF HT=4 THEN 350
340 GOSUB 967:GOTO 40
350 INPUT "(CLR) (DWN) (DWN) (RGT) (RGT) (RGT) (RVS) ANOTHER GAME"
:AS:IF A$="N" THEN SYS 64818
360 PRINT "(CLR)";:RUN
900 FOR J=828 TO 886:READA:POKEJ,A:NEXT
910 FOR J=7432 TO 7585:READA:POKEJ,A:NEXT
940 FOR J=910 TO 968:READA:POKEJ,A:NEXT
950 FOR J=7424 TO 7431:POKEJ,0:NEXT:POKE 36869,255:POKE 36879,8
:POKE 36878,15
960 FOR J=7168 TO 7231:READA:POKEJ,A:NEXT
964 POKE 1,22:POKE 3,22:POKE 2,30:POKE 4,150
965 S=8142:C=38862:P=37137:P1=37152
966 INPUT "(CLR) (RVS) (DWN) (RGT) (YEL) SKILL LEVEL";SK:SK=SK/10
967 PRINT "(CLR) (RVS) (CYN) SCORE", "HITS"
968 PRINT "(D/N) TAB(19) (YEL) EF:FOR J=0 TO 21:POKE 8164+J,7
:POKE 38884+J,4:NEXT
969 FOR J=900 TO 909:POKE J,0:NEXT
970 POKE 37139,0:POKE 37154,127:RETURN
1000 DATA 162,9,188,132,3,240,34,185,142,3,168,177,1,201,1,240,28,
169,32,145,1
1010 DATA 254,132,3,188,132,3,185,142,3,240,19,168,169,0,145,1,169
,5,145,3,202
1020 DATA 208,214,96,169,32,230,0,145,1,169,0,157,132,3,24,144,238
1030 DATA 162,22,189,7,31,240,4,202,208,248,96,173,4,144,41,3,208,
245,169,2
1040 DATA 157,29,31,157,29,151,24,144,234
1050 DATA 162,176,189,29,31,201,2,240,8,201,1,240,20,202,208,242,
96,169,32,157,29
1060 DATA 31,169,2,157,51,31,157,51,151,24,144,236,169,32,157,29,
31,24,144,220
1070 DATA 162,0,189,0,30,201,3,240,13,189,242,30,201,3,240,29,232
,224,242,208,237
1075 DATA 96,169,32,157,0,30,189,234,29,201,32,208,34,169,3,157,
234,29,157,234,149
1080 DATA 24,144,213,169,32,157,242,30,189,220,30,201,32,208,19
,169,3,157,220,30
1085 DATA 157,220,150,24,144,190,169,1,157,234,29,24,144,182,169
,1,157,220,30,24,144,174
1120 DATA 41,40,39,38,37,58,79,100,99,98,97,74,73,94,116,139,140
,119,97,75
1130 DATA 53,30,29,50,71,93,115,136,157,178,199,221,244,245,246
,247,248,249,250
1140 DATA 251,230,209,210,232,254,255,234,213,190,167,146,125,
126,127,106,107,86,64,0
1150 DATA 60,126,153,255,255,90,129,66,52,129,254,255,255,127,
254,117
1160 DATA 16,24,8,16,24,8,16,16,16,24,8,16,24,8,16,16
1170 DATA 24,24,60,126,126,255,255,255,31,63,127,201,255,127,
63,7
1180 DATA 248,252,254,147,255,254,252,224,65,219,255,255,255,
255,255,255
```

Programmable Character Maker for the Sorcerer

By Peter Fallon, Castle Hill, NSW

THIS PROGRAM is an aid for making programmable char-

acters. By drawing the character for the program, it can tell

SORCERER

you the data required to use it in a program as well as show you what the final character looks like.

Programmable characters on the Sorcerer are made up of an 8 by 8 dot array. Each of the eight horizontal rows is recorded as eight bits (or one byte) in memory. Therefore each dot is controlled by a bit in memory and can be plotted on and off by setting it to 0 or 1.

The program sets up the array and, starting at the top left corner, requires you to say if you want a dot on or off. A flashing cursor marks the dot in question. If you make a mistake you can restart a horizontal line

(press R) or restart the whole shape (press P). Note that for both of these, your character up to that point remains on the screen for reference.

The routine can be used where most GET A\$ commands are used in programs for the Apple, Pet, VIC-20 and so on, so it should be useful for conversion of programs between systems.

Note:

1) A key is only indicated as pressed if pressed while the routine is running (line 140 shows the way of waiting for a keystroke).

2) If you hold a key down, program execution halts until you release it.

```
1 REM Programmable Character Generator Program
2 REM Written by Peter Fallon
5 REM Data for Keyboard scan routine
10 DATA 205,21,224,194,250,223
20 DATA 205,9,224,50,255,0,201
30 FOR Z = 240 TO 252 : READ A : POKE Z,A : NEXT
35 FOR Z = -512 TO -505 : POKE Z,255 : NEXT
40 DIM A(8) : POKE 255,0
45 FOR Z = 1 TO 8 : A(Z)=0 : NEXT : IF PEEK(255)=80 THEN 180
50 PRINT CHR$(12);"Programmable Character Maker"
60 FOR Z = 1 TO 28 : PRINT"-"; : NEXT : PRINT
70 PRINT TAB(20);"by Peter Fallon"
80 PRINT : PRINT"The character is made up of 64 dots,"
90 PRINT : PRINT"arranged in an 8*8 matrix,"
100 PRINT : PRINT"For each dot you must tell me"
110 PRINT : PRINT"if you want it to be on (Y) or off (N)."
```

SIGMA/OKI

Ski for Sigma-Oki IF800

By Tony Hinde, Tarragidi, QLD

Ski is a game to test your ability to make decisions in the heat of the moment. You must have a

The object of the game is to ski down a thin path between the trees of a burning pine forest. You will die immediately if you hit a tree or enter the fire.

You will be permitted to fry again, if you wish.

The screen is set in 40 character mode to increase the speed. There is also a difficulty rating which controls the pine tree density of the forest. Movement is controlled by the arrow keys.

SIGMA/OKI

```
10 COLOR 2,6 : WIDTH 40 : CLS : T=TIME
20 DEF CHR$(182)="24R5663C3C242424"
30 INPUT "level of difficulty 'hard 1 to easy 5' :";E : E=E+1 : IF E>6 THEN E=6
40 X=16:R=19
50 H=INT(RND*2+.5)-1
60 X=X+H : IF X>31 THEN X=31
70 IF X<1 THEN X=1
80 R=INT(RND*2+.5)-1
90 LOCATE 0,24,0 : PRINT STRING$(X,193);
100 COLOR 4,7 : PRINT STRING$(8+R,32);
110 COLOR 2,6 : PRINT STRING$(32-X-R,193);
120 COLOR 4,7
130 J=INT(RND*(7+R)+.5)+1
140 LOCATE X-1+J,23,0 : PRINT CHR$(128); : IF RND*E < 1 THEN 130
150 LOCATE 24,0,0
160 K=INKEY$ : IF K$="" THEN 180 ELSE K=ASC(K$) : IF K<20 OR K>29 THEN 180
170 IF K=20 THEN A=A+1 ELSE A=A-1
180 IF A<1 THEN A=1 ELSE IF A>39 THEN A=39
190 COLOR 4,7 : S=SCREEN(A-1,1) : IF S<>32 THEN 230
200 COLOR 2,6 : S=SCREEN(A-1,1) : IF S<>32 THEN 230
210 COLOR 1,7 : LOCATE A-1,0,0 : PRINT CHR$(182); : COLOR 2,6
220 GOTO 50
230 COLOR 4,0 : T=TIME-T-11
240 PLAY "T8004L16N8P16L18N3P48N3L8N5N3P8L8N7N6"
250 CLS : IF S = 128 THEN PRINT " You had a collision with a tree, after " : GOTO 270
260 IF S=193 THEN PRINT " you were consumed by fire, after " :
270 IF T>59 THEN PRINT INT(T/60); " minutes and " : T=INT(T/60)*60; " seconds " ELSE PRINT T; " seconds "
280 PRINT " would you like to ski again ?"
290 K$=INKEY$ : IF K$="" THEN 290 ELSE K=ASC(K$)
300 IF K$="y" OR K$="Y" THEN 10
310 IF K$="n" OR K$="N" THEN CLS : END ELSE GOTO 290
```

VZ200

Graphic Sine Waves for VZ200.

By Dean Nickasen, Murrumbidgee, VIC

This program will draw sine-waves in the graphic symbols of the VZ200. Lines 10 to 90 input the values for the sinewave. Lines 100 to 200 plot the graph. The purpose of line 210 is to keep the computer in the graphics mode.

To modify the program for other computers, lines 100 to 200 will have to be changed. Instead of setting points, a PRINT TAB(Z) statement will work. The program will also work on the VZ200 in this manner.

```
10 REM GRAPHIC SINE WAVES
20 REM BY DEAN NICLASSEN
30 REM SEPTEMBER 1983
40 CLS
50 PRINT " ENTER THE LOWEST LIMIT FOR X";:INPUT A
60 PRINT
70 PRINT " ENTER THE UPPER LIMIT FOR X";:INPUT B
80 PRINT
90 PRINT " ENTER EXPANSION AND SHIFT";:INPUT E,S
100 MODE(I)
110 FOR X=A TO B STEP(B-A)/80
120 Y=2*COS(4*X-.349)+3*SIN(3*X+I.309)
130 Z=E*Y+S
140 IF Z>127 OR Z<63 THEN 210
150 COLOR 3,0
160 SET(S+40,G)
170 COLOR 2,0
180 SET(Z+40,G)
190 G=G+I
200 NEXT X
210 GOTO 210
```

CBM/4016

Pet Screen Grid for CBM 4016

By Peter Bungay, Wagga Wagga, NSW

CBM/4016

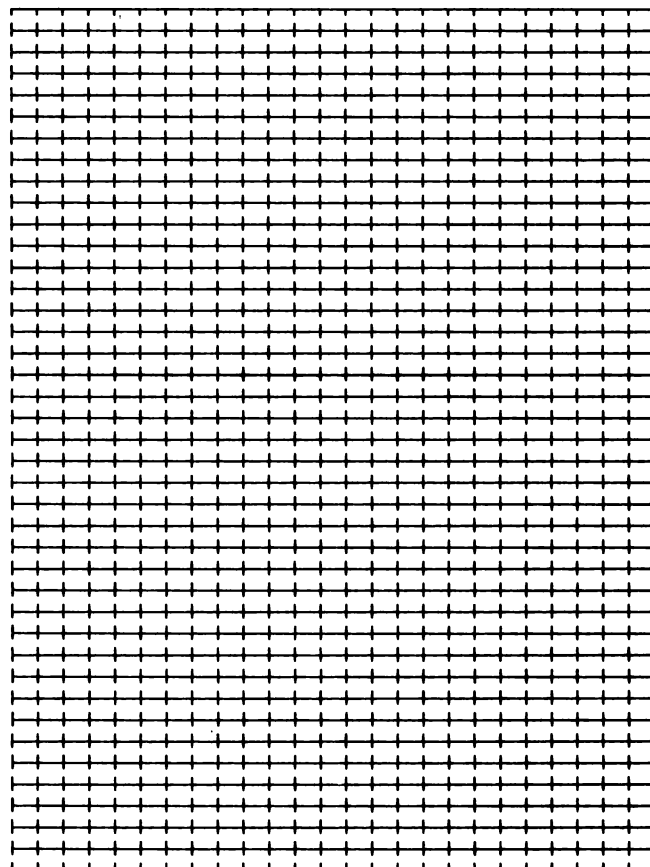
This is a short routine that will produce a 40 x 25 grid to aid in the setting out of screen layout.

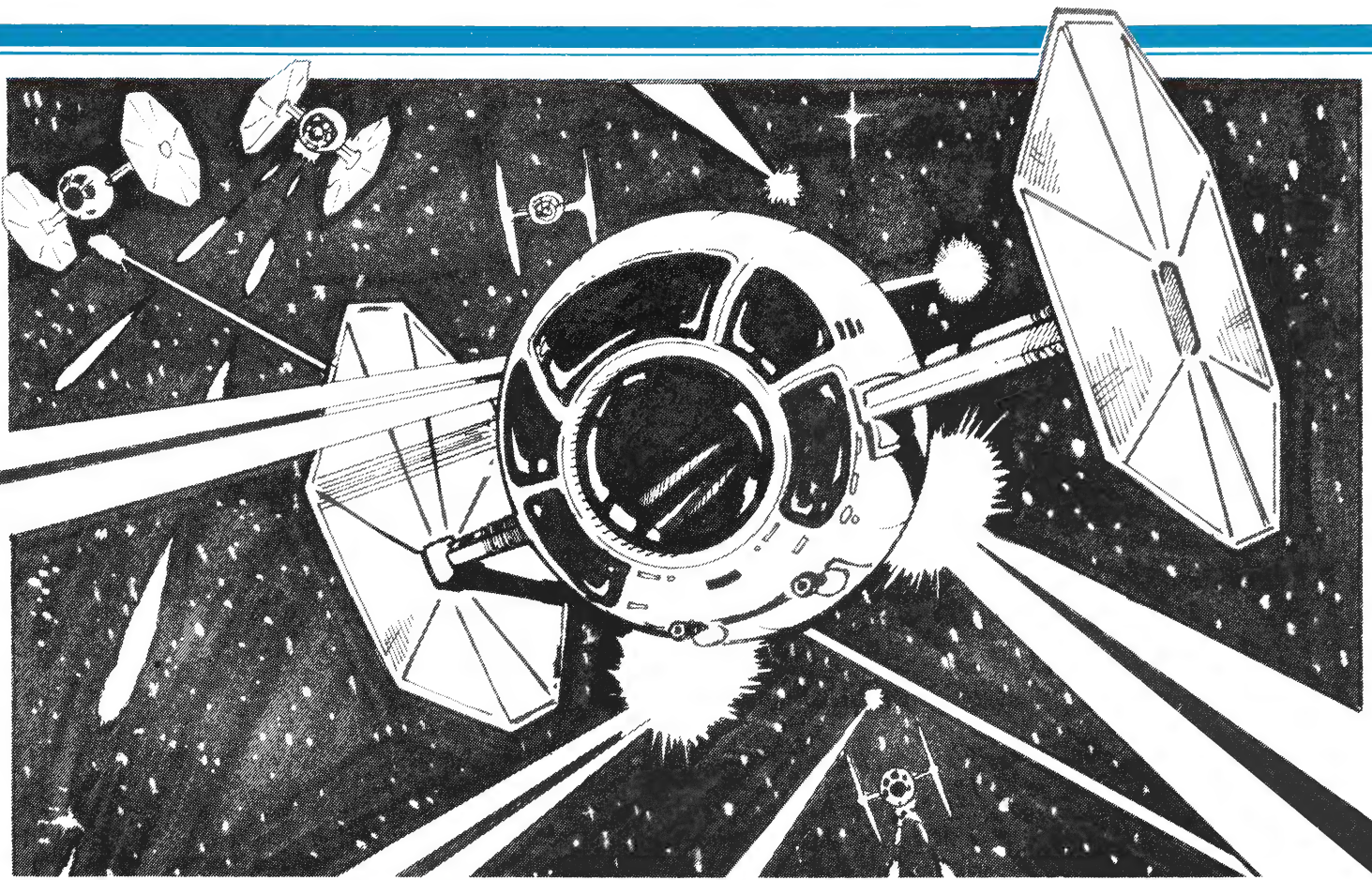
By using the grid sheet you can see how instructions will look on the screen and then decide whether to use TAB or cursor rights and how many cursor downs to include in the programme without the usual trial and error.

To increase the number of copies adjust lines 180-190, and to move the grid further up or down the sheet, change the value in line 290.

The programme was written on a CBM4016 and printed with a 4022P printer.

```
100 REM ...PET SCREEN GRID...
110 REM ...PETER BUNGAY 13 NOV 83...
120 PRINT""
130 PRINTTAB(11)*" PET SCREEN GRID"
140 PRINT""THIS PROGRAMME WILL PRINT A 40 X 25"
150 PRINT""GRID THAT WILL AID IN SETTING UP YOUR"
160 PRINT""SCREEN OUTPUT."
170 INPUT""HOW MANY COPIES REQUIRED";C
180 IF C<=5 THEN 220
190 IF C>5 THEN PRINT""ARE YOU SURE? PAPER IS SCARCE!"
200 PRINT""KEEP IT LESS THAN 5"
210 INPUT""HOW ABOUT CHANGING IT";C
220 PRINT""CONTINUE - Y OR N"
230 GETC$:IF C$<>"Y"AND C$<>"N" THEN 230
240 IF C$="Y" THEN 260
250 IF C$="N" THEN PRINT"";END
260 OPEN 1,4
270 FOR T=1 TO C
280 PRINT#1,CHR$(147)
290 FOR P=1 TO 8:PRINT#1:NEXT P
300 PRINT#1
310 PRINT#1,TAB(10)" " ;:FOR A=1 TO 24:PRINT#1,"-";:PRINT#1,"-";:NEXT A
320 PRINT#1,"-";:PRINT#1,"-"
330 PRINT
340 FOR B=1 TO 39
350 PRINT#1,TAB(10)" | " ;
360 FOR C=1 TO 24:PRINT#1,"-";:PRINT#1,"-";:NEXT C
370 PRINT#1,"-";:PRINT#1,"-"
380 NEXT B
390 PRINT#1,TAB(10)" | " ;:FOR D=1 TO 24:PRINT#1,"-";:PRINT#1,"-";:NEXT D
400 PRINT#1,"-";:PRINT#1,"-"
410 PRINT#1,CHR$(19)
420 NEXT T
430 CLOSE 1
READY.
```





STAR STRIKER

A THREE DIMENSION, HIGH RESOLUTION ARCADE GAME
FOR THE MICROBEE

BE A JEDI!!

CASSETTE **\$25.00**
DISK **\$30.00**

MYTEK DEALERS

MICROBEE IS A TRADEMARK OF APPLIED TECHNOLOGY PTY. LTD.

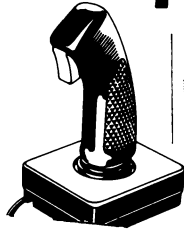
Altronics 105 Stirling Street, Perth 6000.
Ausbug 11 Gibson Street, Richmond 2753, N.S.W.
Broken Hill Microbee Users Club 553 Radium Street, Broken Hill 2880, N.S.W.
Canberra Microbee Users Group 21 Keys Crescent, Wanniasa 2903, N.S.W.
Central Data 14A Goodwin Street, Launceston 2750, TASMANIA
Coastal Software 3 Westbrook Parade, Gorokan 2263, N.S.W.
Computed 8 Park Arcade, 17 Park Avenue, Coffs Harbour 2450, N.S.W.
Computerland Suite 19, Albert Square, 19-37 Albert Road, Melbourne 3000, VICTORIA
Computer Biz 30 Armstrong Street, North Ballarat 3350, VICTORIA
Compu-K Casino Street, Lismore 2480, N.S.W.
Computech Belconnen Churches Centre, Benjamin Way, Belconnen 2616, N.S.W.
Cosmic Software G.P.O. Box 3494, Sydney 2001, N.S.W.
Electrographic Office Systems Suite 6, Pentagon Building, 25 Grafton St., Cairns 4870
Electronic Agencies 117 York Street, Sydney 2000, N.S.W.
Electronic Agencies 121 Forest Road, Hurstville 2220, N.S.W.
Electronic Agencies 115 Paramatta Road, Concord 2137, N.S.W.
Flying Fox Software P.O. Box 187, Lindfield 2070, N.S.W.
Griffith Computing & Data Systems P.O. Box 815, Griffith 2680, N.S.W.
Jaycar Cnr. Caringford & Pennant Hills Roads, Caringford 2118, N.S.W.
Jaycar 125 York Street, Sydney 2000, N.S.W.
Key Computer 77 Grenfell Street, Adelaide 5000, S.A.
McGraths Electronics 55 A Beckett Street, Melbourne 3000, VICTORIA

Microbee Users Group of Australia P.O. Box 157, Nunawading 3131, VICTORIA
Microbee Users Group of S.A. G.P.O. Box 767, Adelaide 5001, S.A.
Mike Sandeman's TV & Computers Shop 3, Gregory Terrace, Alice Springs 5750, NORTHERN TERRITORY
Pine Street Trading 54 Pine Street, Tom Price 6751, W.A.
Quantum Computers 194 Liverpool Street, Hobart 7000, TASMANIA
Ritronics 48 A Beckett Street, Melbourne 3000, VICTORIA
SOFTWARE 80 105 Milton Road, Milton 4064, QUEENSLAND
Sydney Microbee Users Group P.O. Box 60, Erskineville 2043, N.S.W.
Timbertown Computers 94 High Street, Wauchope 2446, N.S.W.
Tomorrow's Electronics & Hi Fi 68 William Street, Gosford 2250, N.S.W.
Town & Country Computer Anne Street, Aitkenvale, Townsville 4814, QLD.
The Computer Works 3/19 Isabella Street, Wingham 2429, N.S.W.
T & T Computing 1 Derrington Street, Mount Gambier 5290, N.S.W.
Checkpoint Computers 36 Main Road, Tawa, NEW ZEALAND
S.J. Schmidt Boks 3, N-9801, Vadso, NORWAY

MYTEK COMPUTING
1 Kent Street, Bicton, 6157, W.A.
Telephone: (09) 330 7336.

The Best Spot in town for all your personal computing needs.

**SPECIAL
PACKAGE
OFFERS**



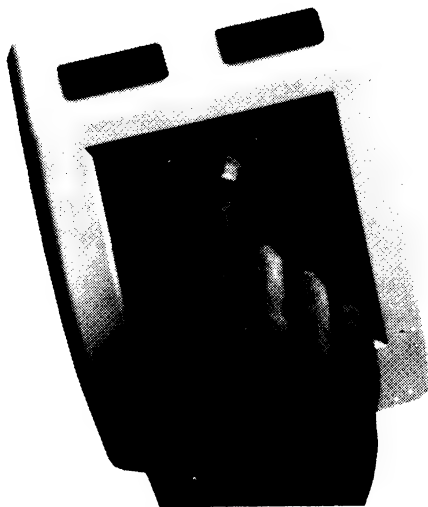
Spectravideo SV318
\$399*

Commodore 64
Triga Command Joystick
Cassette Recorder
& 4 Ozi Soft Programs
\$569

SAVE \$100

VIC 20
Triga Command Joystick
Cassette Recorder
& 4 Ozi Soft Programs
\$369

SAVE \$89



NEW! The remarkable KoalaPad
High-resolution Computer
Graphics Touch Tablet from
\$149.95. Includes Software
Package



Spectravideo SV328
\$699*

NEW SOFTWARE JUST ARRIVED!

FOR COMMODORE 64

Zork. 1, 2 & 3.....	\$25.00*
Kongo Kong.....	\$24.95*
Home Manager.....	\$39.95*
Master File.....	\$39.95*
Underworld.....	\$24.95*
Bridge.....	\$24.95*
Choplifter (cart).....	\$64.95*

FOR VIC 20

Macpan.....	\$19.95*
Cops & Robbers.....	\$19.95*
Fly Snatcher.....	\$19.95*
Mosquitoes.....	\$19.95*
Curse of the Werewolf.....	\$19.95*
Scramble.....	\$19.95*

FOR ATARI

Strip Poker.....	\$39.95*
Bridge.....	\$24.95*
Monkey Maths.....	\$29.95*
Draw Pic.....	\$39.95*

Sydney's Largest Stockist of
Commodore 64 and Vic 20
Software and Utilities.

HARDWARE

NOW AVAILABLE!

The new Atari 600XL (16K)
\$399*

And the new Atari 800XL (64
\$599*

Sinclair Spectrum from **\$299**
With complete software range
available ex-stock.

Now franchised agent for B.B.C.
MICROCOMPUTER
Used by the ABC and
recommended for use in schools in
5 out of 6 states in Australia

EXCLUSIVE

2X

Extended Warranty

Doubles the Warranty Period

The Computer Spot now offers an
Exclusive Extended Warranty that
doubles the warranty period on
pre-tested hardware to ensure
trouble-free operation.

*Recommended Retail Price

And so much more... from the spot with
the lot in Home Computing.

the Computer Spot

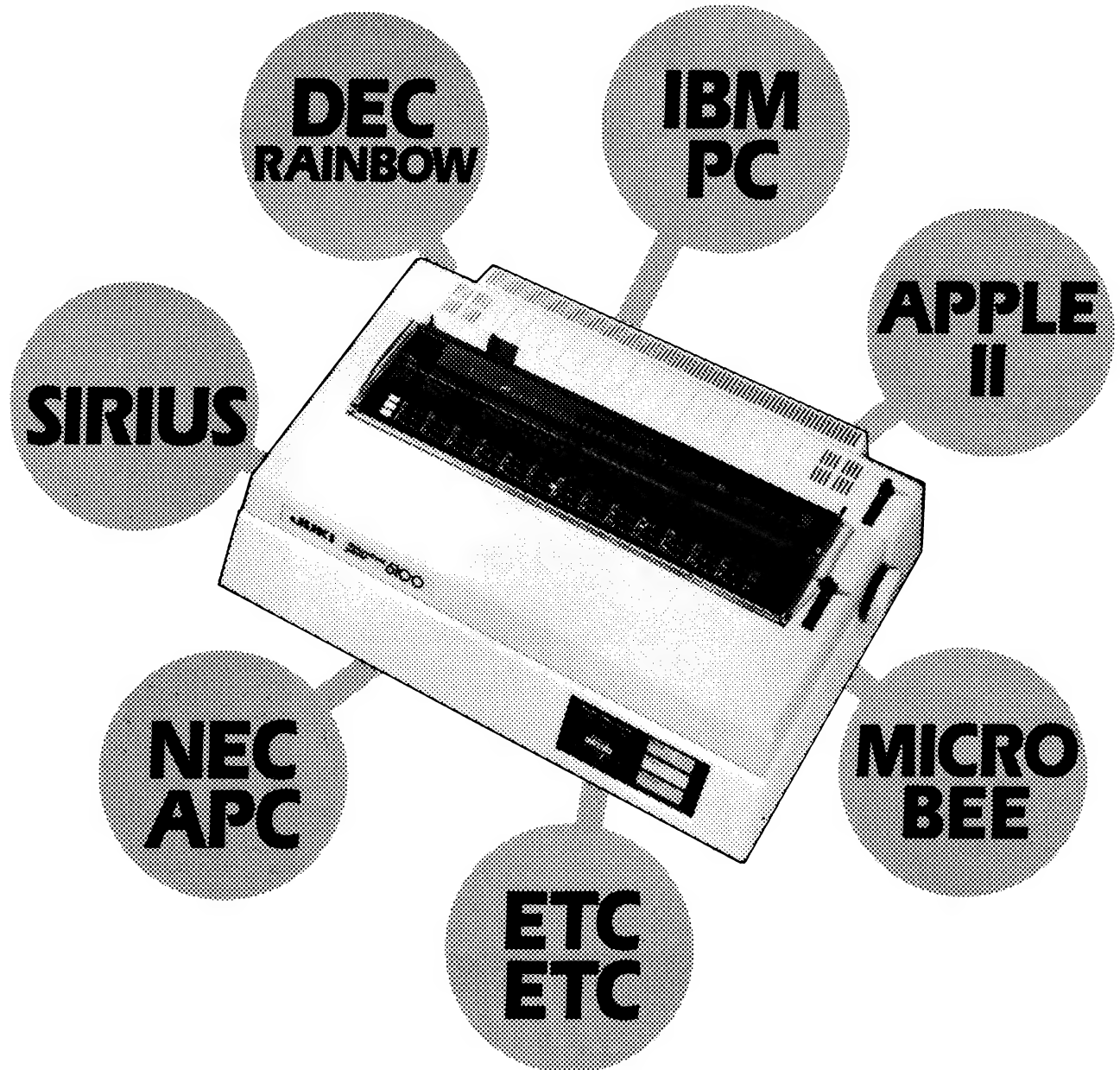
Castlereagh Street Level MLC Centre,
Martin Place, Sydney 2000. Tel. 235 2971

Gallery Level Eastgate Centre, Bondi
Junction 2022. Tel. 387 5208

The Juki 6100 Daisy Wheel Printer
suits all these and many more
personal computers

\$995

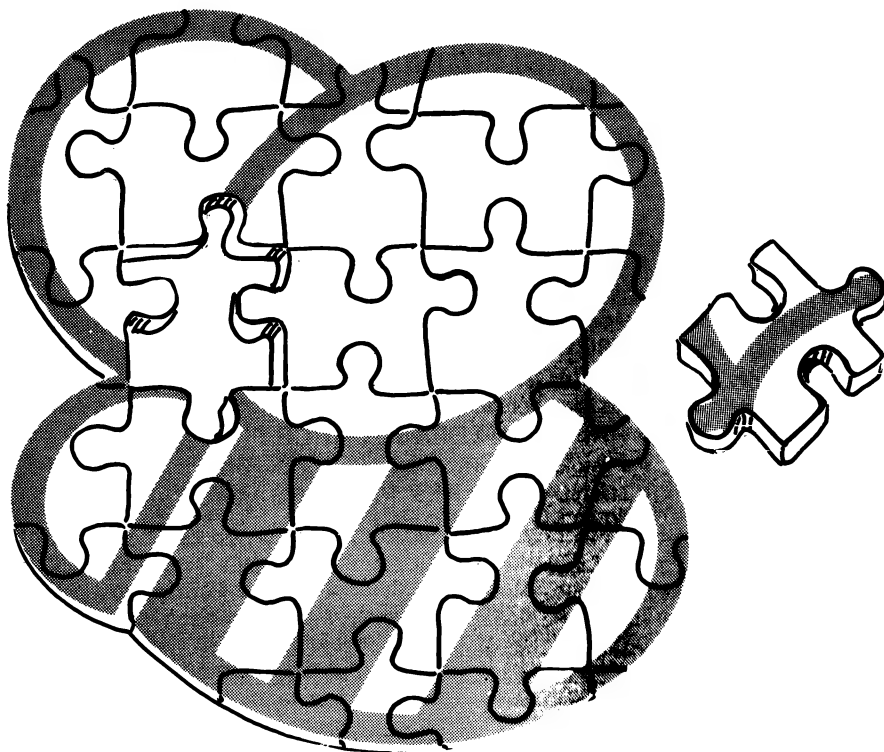
INCLUDING TAX



Ring Mitsui or your local retailer for details

Mitsui Computer

1-3 Rodborough Rd Frenchs Forest NSW 2086 Telephone (02) 451 7711
303 Coronation Drive Milton QLD 4064 Telephone (07) 369 7799
131 Sturt Street South Melbourne VIC 3205 Telephone (03) 690 6722



Disassembler For The Microbee

Mytek Computing has released a disassembler for the Microbee. Marketed under the name BEEZ80, this program is available from Mytek in Western Australia for \$20. Mike Newnham reviewed it for us.

THE PROGRAM LOADS from BASIC and when it executes, the user is treated to a pixel-by-pixel generation of the Mytek logo. The screen is then initialised with the introduction to the program. This reveals another name for this piece of software; BEEZ80 unmasked appears to be a Microbee version of ZAP80, which was released some years ago for the Exidy Sorcerer.

BEEZ80 is designed to run on a BASIC-only Microbee; you do not need to have EDASM fitted.

The main selling point of this program

is that it will disassemble the so-called 'hidden codes'. These codes are a group of about seven hundred code combinations that were never documented by Zilog. Some of them can be executed by the Z-80, but they are of little real value to serious users. While the Z-80 will apparently execute about 100 of these codes, not all Z-80s will execute them in the same manner. This is due to differences between the various makes and models of the Z-80 chip itself. Therefore, if you write software using these code combinations, it may not run on all other Microbees, and it is not advisable to try to market software using these codes.

Consider that to disassemble 'hidden codes' they must already exist as an operational piece of software, or a contrived list. I am not aware of any Z-80 assembler that supports mnemonics for these 'illegal' codes. Naturally they can

be created using DEFine Byte or DEFine Word instructions, and if they execute on *your* machine, that is the only thing you can be sure of.

The main reasons for the omission of these codes from the Z-80 instruction set are that their function may be altered by chip differences, the operation that they perform is of very limited use and that, if really needed, most of them are easily derived from the standard instructions.

Will They Run On Your Bee?

Ultimately, it is up to the individual to determine which codes will run on his or her machine. It is first necessary to generate a table of all the 'hidden' sequences. Next you must disassemble them to establish the operation they can be expected to perform. You then have to test each combination to ensure it performs the operation its mnemonic suggests.

While checking operation, it is also necessary that the flags be monitored to determine any effects on them. I generated some of the hidden codes which have the DD, FD and ED prefixes. The majority of these codes operate in the same manner as some of the legal codes, but they use more memory to do it. For example, the legal instruction 43'H' will cause the contents of the E register to be placed in the B register. The 'hidden code' DD 43 does the same thing.

While the DD prefix provides for operations using the IX register and the FD prefix acts on the IY register, two 'hidden codes', FD 25 and FD 2C, disassembled as DEC HX and DEC LX respectively. In other words, two IY codes disassembled as IX operations. I don't know if there are any other anomalies of this nature – someone else can have some fun.

The remainder of the 'hidden codes' appear to deal with operations involving the upper and lower halves of the IX and IY registers.

The rest of the program is quite straightforward. Six options are available to the user. These are presented as prompts, to which you respond on a yes/no basis. Two of these make the output readable as it progresses, either by slowing the output or by displaying one screen of information at a time.

One optional feature allows output to be directed to a printer. I have an Epson printer set up for serial data transfer; try as I might it would not print when I selected the printer option. I don't have a parallel interface cable and I didn't want to pull my printer apart, so I didn't attempt to determine whether it would work in parallel mode. I assume Mytek have decided that a user of this program ►

**DON'T WASTE YOUR VALUABLE SOFTWARE, MONEY OR TIME!
BEST PRICES ON APPLE COMPATIBLE GEAR FROM**

SOUTHERN CROSS RESOURCES



The Super 5 Quality Disk Drive

- Quiet reliable operation • TEAC Mech.
 - Direct from Japan
 - 6 months warranty • 14 day money back trial
- NEW SHIPMENT — NEW PRICE!**
NORMALLY \$448.00 NOW \$376.00 incl. tax!

The Super 5 CP80 Dot Matrix Printer

- Flexible, friction and tractor drive
- 640 graphic dots/line density
- Epsom FT type III compatible

NEW SHIPMENT — NEW PRICE!
NORMALLY \$618.00 NOW \$499.00 incl. tax.

- | | | |
|--|---------------------------------------|------------|
| • DISK CONTROLLER CARDS | \$70 | incl. tax! |
| • PARALLEL INTERFACE PRINTER CARDS (with cable!) | \$70 | |
| • 16K RAM EXPANSION CARDS | \$50 | |
| • Z80 CARDS | \$53 | |
| • SPEECH SYNTHESISER CARD (with speaker and disk) | \$56 | |
| • PAL TV INTERFACE CARDS | \$70 | |
| • PAL CARD with modulator for SOUND thru TV | \$105 | |
| • HAND-HELD KEY PADDLES FOR GAMES AND VISICALC OPERATION | single \$52 double \$67 | |

PAY ☐ MONEY ORDER ☐ CHEQUE ☐ BANKCARD
Send to: **SOUTHERN CROSS RESOURCES**
P.O.BOX 279, DEE WHY NSW 2099

Bankcard No.

Name

Address

Signature Expiry Date

PHONE: (02) 981-1585

ADD \$5.00 POSTAGE

OR WRITE FOR

FOR 1st and \$2.00

MORE INFORMATION

FOR EACH OTHER ITEM.

PRICES HOLD ONLY WHILST STOCKS LAST!

Sendata 300 Modem Direct Connect



A new direct connect 300 bps modem that is no taller than a 50c piece and fits snugly under the base of a telephone, has been released by Australian communications manufacturer, Electromed. Called the Sendata 300 the modem is simple to operate and does not require operator training. It attaches to the existing telephone wall socket plug and becomes fully operational with the flick of a switch by the operator.

- No installation costs.
- Simple operation.
- Fits under telephone base.
- Attaches to existing telephone plug.

SENDATA

OF M AND DEALER ENQUIRIES WELCOME

ELECTROMED

ELECTRO-MEDICAL ENGINEERING P/L

69 SUTHERLAND ROAD, ARMADALE,
VICTORIA 3143, AUSTRALIA
TELEPHONE: (03) 509 5844.
TELEX: AA34008

will also be using the parallel interface for the printer.

Another feature is the option of having a linefeed occur after a jump or RET instruction — handy for separating sub-routines, or other functional blocks, from surrounding code. 'Hidden code' disassembly will only take place if the user selects this as an option.

The other feature available, again as an option, is the ability to have the data within memory displayed as ASCII. This is useful for finding text storage areas. The output format in this mode takes the form of a row of sixteen bytes of data, preceded by the address of the first byte. The ASCII equivalent (if valid) for each of these values is printed underneath it.

If the data does not represent a valid ASCII code, then a question mark is printed. Unless you have a printer available, it is only possible to view 80 bytes of data and their ASCII equivalents at a time. While the Screen Wait option displays fifteen lines of output at a time, in ASCII mode each row of memory data takes up three screen lines for the data and its equivalents, and a linefeed to separate each group from the next. Thus, only the last five sets of data remain on-screen.

When the user has selected the options required for the disassembly, the program requests the start and finish addresses of the block of memory to be disassembled. The user is then confronted with 'ANY MORE (Y/N/C)'. A 'yes' response will generate a prompt for more addresses; the options will remain as selected. If 'no' then the program executes a WARM START. Re-entry to BEEZ80 is via the EXEC command in BASIC. If you respond with 'C', then BEEZ80 is initialised to enable the selection of new options.

Though not mentioned in the documentation accompanying the program, use of the BREAK key will allow exit from a disassembly, and the ESC key will create a COLD START.

Limitations

The program does have its limitations, and from some points of view they are very restrictive. BEEZ80 is a single-pass disassembler which does not generate a source (mnemonic) file for later re-assembly. To serious assembly language programmers, this is the greatest limitation.

Second, BEEZ80 does not generate labels during disassembly. Labels are devices which are used primarily to identify instructions which are accessed via either subroutine calls or direct or relative jumps in a program. In assembly language programming, labels are virtually obligatory. In a disassembler, which

will generate a source file for re-assembly, they are again essential. Even in a disassembler which does not produce a source file, labels still make the task of threading your way through a long listing less tedious.

Sometimes it is necessary to move code to another area of memory before it can be disassembled. This is the case if the disassembler itself occupies all or part of the RAM used by the program to be disassembled. The disassembler must then be provided with an offset, which is the difference between the normal resident address of the first instructions of the program and the address it now occupies for the purposes of disassembly. This offset will enable the disassembler to generate true addresses in the address field for the listing. Where the disassembler prints the destination address of relative jumps, this offset is again required to create the true address. BEEZ80 does not provide this feature, and it must be remembered when disassembling relocated code.

This program is not a powerful software tool and is best suited to those programmers who really only want to dig into machine code routines to see how they operate, or to those who want to investigate the behaviour of the hidden codes. ☐

Lothlorien Software

Cultivating New Concepts
COMPUTER SOFTWARE SPECIALISTS



EDUCATION

FRENCH & GERMAN TUTORS,
SPELLING & SPEED READING,
AUSTRALIAN GEOGRAPHY,
THE UNIVERSAL TUTOR

SCHOOL RECORDS & REPORTS

ADMIN. & FILING

ARCHIVE—BIBLIOGRAPHY—
FILING

THE LIBRARY CATALOGUE
THE LIBRARIAN'S
ASSISTANT

— LOAN SYSTEM —

GAMES

THE CAVERNS OF MORDIA

**G.P.O. BOX 1033,
SYDNEY 2001**

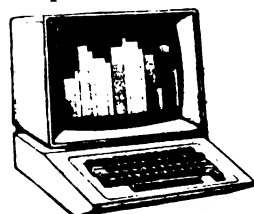
Phone: (02) 398 4023

Get the **Best From the Biggest!**

**How can we tell you
about 100 computer
games in one
advertisement?**

Strategy, Science Fiction, Fantasy, Adventure, Education, Sports & Arcade GAMES for the HOME COMPUTER

Micro Computer Games



FROM

- EPYX
- Avalon Hill
- Strategic Simulations

**Apple II, Atari 400-800,
TRS 80, VIC 20, IBM PC,
COMMODORE 64**

Mail Order Specialists

Write today for free catalogue

Open Mon to Fri, 9.00 am to 5.00 pm
extended hours Fri to 7.30 pm,
Sat, 10 am to 12 pm

COMPUTER SIMULATIONS

18 Fonceca Street, Mordialloc,
Vic. 3195. Telephone: (03) 580 9955

Dealer Enquiries Welcome



System Expansion

Part 2

The When And How Of Adding Things On

In the first part of this article Roy Hill considered the relative merits of both serial and parallel data transmission. He follows it up this issue with his views on the S100 bus.

I DELIBERATELY did not mention S100 in the first part of this article. My reason for not talking about it is simple – I think it's a disaster. For a start, who needs 100 problems, when ten are usually enough to give us all the ulcers we need? For a second consideration, who needs uni-directional data lines, when most computers provide for bi-directional lines? Thirdly, who needs clock lines running right beside power lines with all the spikes and glitches one could ever wish to avoid?

I have a recurrent nightmare in which an evil wizard (note – I did not say Sorcerer) condemns me to convert all my nice, simple serial and parallel lines to an S100 bus. Just the thought is enough to make me consider early retirement! Yes, I know S100 is a standard, but I also know of plenty of rotten standards.

Consider the humble RS232 interface of 25 pins. Most of us know that RS232 is designed for serial transmission, which as I mentioned in Part 1 only requires a maximum of seven lines (if we also include a Data Set Ready (DSR) and Data Carrier Ready (DCR) line), so why does the RS232 connector have 25 pins? Well, the answer is both simple and complicated!

In trying to create a standard that will last for more than three weeks, the designers have attempted to provide for additional lines that may be required in the future. Of the 25 pins available, two are 'reserved', three are unassigned, and at least another five are secondary lines which are unlikely ever to be used for anything standard. So they become used by computer manufacturers – for

such things as cassette interfaces, modems and so on, which usually leads to problems of compatibility when trying to tie equipment from different manufacturers together.

How Many Lines?

Just how many lines are really needed for interfacing? Well, for a serial interface we have already decided that a maximum of seven lines is needed for our purposes, and ten lines for a simple parallel output. For those who wish to investigate serial and parallel I/O in more depth, I thoroughly recommend the series of articles by Steve Leibson in the February-July 1982 issues of *BYTE* magazine, titled 'The Input/Output Primer'.

For a more complex system expansion, such as extra RAM or ROM, many more lines are needed. Consider a simple expansion of our 'Microvic' from its 4K to, say, 16K. We need a line for our power supply and a line for ground. We need 16 lines for our address bus and eight for the bi-directional data bus. We need a line for each of the phase 1 and phase 2 clocks, but not next to the power supply lines. Finally, we need a Read/Write line. This makes a *minimum* total of 27 lines for a RAM or ROM expansion. If we allow an extra ten lines (for heaven knows what), we still only need 37 lines, which can easily be accomplished using an S22/44 connector, or a Eurocard connector. Thirty-seven lines is not quite 100.

The time has now come for us expansionists to make an important decision. Are we going to keep our trusty cassettes, or are we going to take the big plunge and invest in disks? I have been using two cassette recorders on my SYM-1 computer for over three years now, and I've never really had any major problems with them. My only difficulty is that occasionally I have to adjust the value of the input capacitor, and then

everything is fine again. However, I must remember that I read cassettes at 1500 Baud, and I can understand those Kansas City babes wishing their 300 Baud systems to hell.

Before we discuss the relative merits of disk systems, though, let us assume that our domestic finance manager has just broken into peals of laughter at our timid suggestion that \$1400 would be well spent on a double disk drive, and that we have retired, sulking, from the field of combat.

What can we do to expand our system, without having first to search for a suit of armour or a spouse-proof force field. First, we must be able to hop inside the machine, armed with a suitable circuit diagram and plenty of determination. It is at this stage that I must resort to personal experience. My SYM-1 computer is one of the kind that sits up and begs you to fiddle. So, with the help of an electronic genius friend of mine, this is how I went about expanding my SYM, following his lead.

Expanding With Care

The SYM is a 6502-based machine, with the provision for 4K of on-board RAM, approximately 65 I/O lines (depending on how they are used), and four 24-pin sockets, whose addresses can be altered to a small extent to suit individual requirements. This is done by removing and/or installing wire links in a small jumper area in the centre of the SYM board. The addresses available at this area are all those from \$8000 to \$ffff, in 2K increments. Thus this area can be used for tying the correct address lines to each of the four 24-pin sockets previously mentioned. These sockets can then be used for the installation of ROMs or EPROMs, according to the wishes of the owner.

The first socket of the four is already filled when the SYM is bought. This socket contains the 4K Supermon ROM,

which is a very powerful monitor routine. The routines provided allow the user to display and alter the contents of specified RAM locations, to block move data within the RAM area, to verify and obtain a checksum of any area of ROM or RAM and to fill a specified section of RAM with a selected pair of hex characters. The routines mentioned are only a few of the many available in this 4K chip, but will serve to illustrate its uses. Of course, the chip also controls the normal POR (power on reset) initialisation, as well all I/O routines and cassette I/O.

What makes this chip of even more use to the SYM owner is the fact that Synertek supplies a *complete* assembly listing of the contents of this ROM, together with comments and a table of the more useful routines and their addresses within the ROM. This listing has been invaluable to all SYM users for two reasons:

1. It allows them to write their own packages (for whatever purpose) and still be able to use those routines which are available in Supermon.
2. It gives an excellent example to the novice programmer of how the experts make the 6502 stand on its head.

For those enthusiasts who examined the assembly listing I included in the last article, it will be noticed that although the printer driver intercepted and modified the normal I/O path, the normal terminal output routine (TOUT) was still used to send the character to the CRT.

The 4K Supermon is tied to the \$80 and \$88 address lines (that is, 2 x 2K).

My next acquisition was the 8K BASIC ROM. This BASIC is a Synertek version of standard Microsoft, and was available in either two 4K ROMs or one 8K ROM. As they were both the same price, it wasn't hard to figure that the 8K ROM was a far better investment; it only requires one socket on the board, instead of two.

The BASIC is fairly standard, with one notable exception – there are no intrinsic trigonometric functions. Synertek has got around this problem to some extent by providing them as a machine language patch, but it must be typed in, saved on cassette, and then loaded in whenever trig functions are required. There is a much better way around this problem, as I will show later.

I was quite happy having only 4K of RAM at this stage, as it takes a while to become familiar with the features of a chip such as this. Besides, at the time I was becoming far more interested in assembly language programming, and

had my eyes on the Synertek Resident Assembler-Editor chip. Once again, this is an 8K chip, available as two 4K or one 8K chip. As before, I opted for the single-chip version, even though this time it was almost twice the price of the 2 x 4K version. This meant that three of the four available sockets were now filled with a total of 20K of ROM. BASIC is located at the 8K block from \$c000 to \$dfff, and the Resident Assembler-Editor (RAE for short) is located in two separate 4K blocks: from \$b000 to \$bfff and from \$e000 to \$efff.

At this stage, my electronic-whiz friend, who also has a SYM, presented me with an EPROM programmer written in RAE format, and with his version of a POR program. He also provided me with the object code of these two programs nicely located on a TMS2516 EPROM (a 2K EPROM). This was located at \$f000 to \$7fff.

The EPROM programmer was brilliant. It could program any of the 2K and 4K EPROMs and even had a routine to program the new 8K EPROMs from Motorola – the 68764. These chips still have only 24 pins (unlike their Texas and Intel counterparts), and still fit very nicely into the 24-pin sockets on the SYM board.

Because my system differs slightly from my friend's (I have heard it said that no two SYMs ever look the same), I modified the POR program slightly to suit my system. The pair of us also added extra RAM capacity in the form of a 32K Beta Board. This was in addition to the 4K RAM already on-board. The 4K of on-board RAM is 2114 static RAM, and the Beta Board 4116 dynamic RAM.

For those who are unaware of the difference, static RAM uses a transistor-type flip-flop. The contents of a given memory cell (or bit) will not change unless written to – in other words, the contents must be actively altered by the user. Dynamic RAM, on the other hand, retains its memory by means of capacitive effect. Because capacitors leak, the dynamic RAM would develop amnesia unless it was periodically 'refreshed'. This refreshing process is carried out so as not to interfere with the normal reading or writing.

However, dynamic RAM requires a special controller and on-board power supply generator, which increase the chip count of the board and thus the cost. Because dynamic RAM can have up to four times the density (four times the memory capacity) of static RAM, however, it still usually works out to be a cheaper form of memory expansion.

Both these systems look as though they will shortly be replaced with a third. Although CMOS RAM needs a bigger

package than static or dynamic (24 pins as against 16 pins), it has the advantage of the low power drain of dynamic RAM coupled with the 'flip-flop' convenience of static RAM. CMOS RAM is also very tolerant of power variations and is a unipolar supply. This means that CMOS RAM can have back-up power supplied by a NiCad battery, which is trickle-charged whenever the computer is being used. This also means that CMOS RAM has the potential to retain the contents of its memory even when the power is switched off. I notice Applied Technology have chosen this system for their Microbee.

CMOS RAM is also becoming cheaper by the minute; at my last pricing, the cost of 2K CMOS chips was \$8. If the cost drops much further, computer fanatics will at last have a real choice to make. Will I buy disks, or will I add extra RAM?

Fooling Your Computer

This now brings me to the main point of this article. In the first section I mentioned that the total addressable memory of any machine with a 16-bit address line is 64K bits. I also mentioned that there is a way in which we can 'fool' our computer into thinking it has more RAM/ROM than its 64K. The technique used for accomplishing this is known as 'Bank Switching', in which RAM/ROM is switched into and out of the same memory address space.

Some store-bought computers already have this facility built in, in the form of a memory management unit, which looks after the complex task of switching. Owners of such units as the 'Microvic' should be able to accomplish the same task if they have access to a memory map and circuit diagram of their machine, and can program in the assembly language for their particular microprocessor. The latter is vital, because high-level languages such as BASIC and FORTRAN are far too slow to implement bank switching.

The whole secret of bank switching lies in the chip used for I/O purposes. This is usually called the PIA or VIA or PIO. Regardless of what it is called, its purpose is usually fairly standard: to provide the user with one or more 8-bit parallel ports and one or more control lines.

The particular I/O chip I wish to consider is the 6522 VIA. This device is a 40-pin I/O chip with two 8-bit parallel I/O ports, two 16-bit programmable timers/counters, a serial data port driven by a shift register and four separate control lines. These are normally used for handshaking, but can be used (subject to some restrictions) for I/O. A diagram of ►

Features

- Two 8-Bit Bidirectional I/O Ports
- Two 16-Bit Programmable Timer/Counters
- Serial Data Port
- Single +5V Power Supply
- TTL Compatible
- CMOS Compatible Peripheral Port A Lines
- Expanded "Handshake" Capability Allows Positive

Control of Data Transfers Between Processor and Peripheral Devices

- Latched Output and Input Registers
- 1 MHz Operation
- Operation over wide temperature range (-40°C to +85°C)

Description

The SYE6522 Versatile Interface Adapter (VIA) is a very flexible I/O control device. In addition, this device contains a pair of very powerful 16-bit interval timers, a serial-to-parallel/parallel-to-serial shift register and input data latching on the peripheral ports. Expanded handshaking capability allows control of bi-directional data transfers between VIA's in multiple processor systems.

Control of peripheral devices is handled primarily through two 8-bit bi-directional ports. Each line can

be programmed as either an input or an output. Several peripheral I/O lines can be controlled directly from the interval timers for generating programmable frequency square waves or for counting externally generated pulses. To facilitate control of the many powerful features of this chip, an interrupt flag register, an interrupt enable register and a pair of function control registers are provided.

Block Diagram

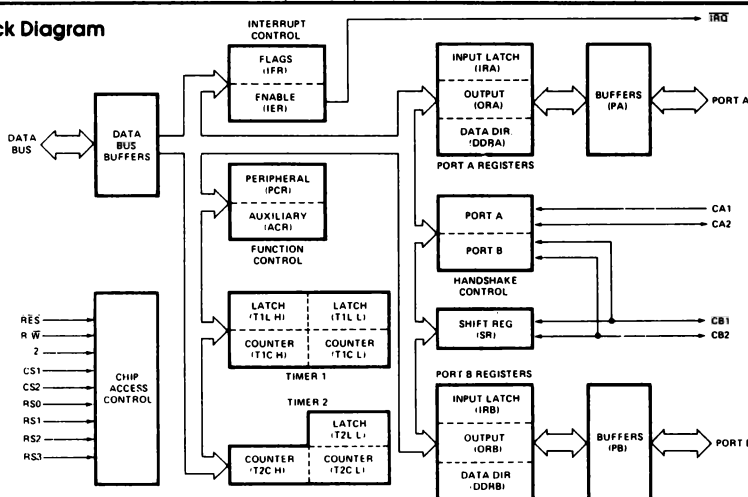
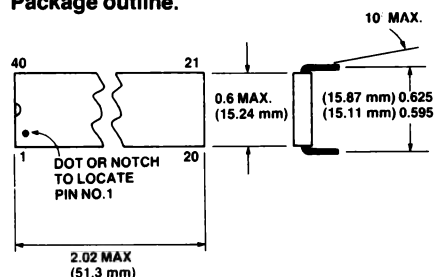
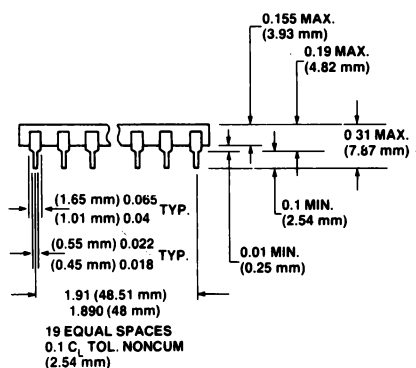


Figure 1. 6522 block diagrams and pinout (courtesy Synertek Systems Corporation).

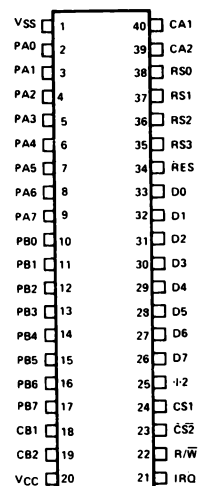
Package outline.



NOTE: Pin No.1 is in lower left corner when symbolisation is in normal orientation.



Pin configuration.



Ordering information.

Order Number	Package Type	Frequency Option
SYP 6522	Plastic	1 MHz
SYP 6522A	Plastic	2 MHz
SYC 6522	Ceramic	1 MHz
SYC 6522A	Ceramic	2 MHz

the 6522 is shown in Figure 1, together with the pinout.

I have three of these devices on my SYM-1 computer, all memory-mapped into 1K address blocks. The one I use for bank switching purposes is located at \$a000 to \$a3ff, and the memory map for this device is shown in Figure 2.

The two ports available for parallel I/O are called PA and PB respectively. Port A is already dedicated to my Epson MX-100 printer, together with two of the lines of port B. One of the lines of Port B is also already used for the input from the cassette recorder (in fact, two are used but the second is an option).

This port is therefore useless as an 8-bit I/O port, unless I wished to recover some of the dedicated pins and use the two available control lines for just that purpose.

Not having enough I/O lines, however, has never become a problem for me – the SYM has up to 71 of them if needed, and more can be added by 'fiddling'. The control line used for bank switching is the one marked PB4. This can be accessed by means of either the S22/44-pin edge connector (pin 13), or by a plated-through hole on the board. I have chosen the latter method as being easier to access. Lines PB3 and PB5 are the two lines used for control of the Epson, and lines PB6 and PB7 are used for the remote control of the cassette motors.

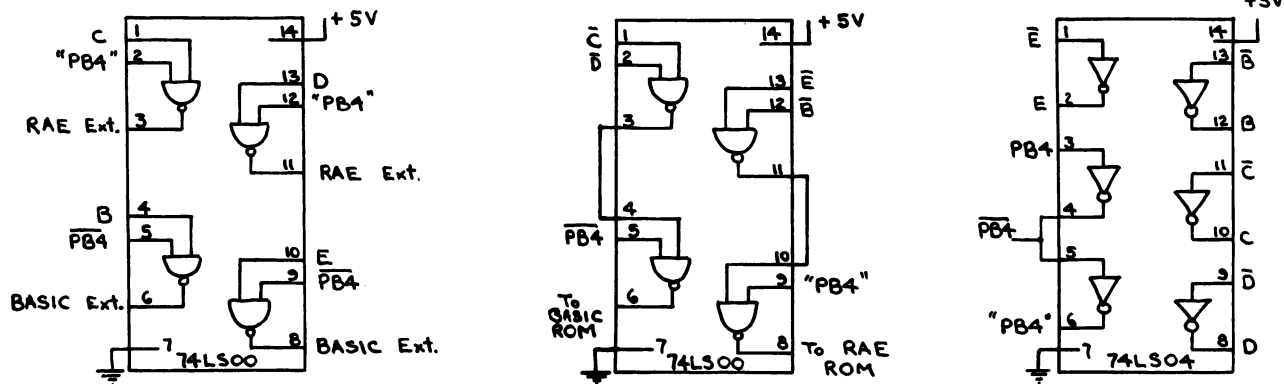
The Power-on-Reset (POR) routine initialises all the default parameters for the SYM, clears the screen, and then prints a menu of the systems available. Depending on the result of the user's input to the request at the end of this menu, the BASIC and its extensions are switched in or out of the same memory space as the RAE and its extensions.

This is accomplished by a bit of simple hardware and software. The software switches the PB4 line either high or low; the hardware comprises two 7400 quad two-input NAND gates, and one 7404 hex inverter. The LS (low-power Schottky diode-protected) versions of these chips are the best to use.

The actual wiring of these three chips is shown in Figure 2. The bar across the top of a chip input or output simply means that the signal being supplied by this pin is an active low (0 V TTL). The specific chip being selected will only have its contents placed on the data bus if the chip select pin (this is pin 20 on the Texas Instruments 2532 EPROM) is at 0 V TTL. Quotation marks around a signal mean that this signal is double inverted. This is used to compensate for the propagation delay encountered by running a signal through two different gates.

The software side of the bank switch-

Figure 2. Wiring diagram for bank switching; the letters indicate address lines from the address bus.



REGISTER	SYM. NAME	SYM. PIN
OUTPUT REGISTER A (NO EFFECT ON HANDSHAKE)	A00F	
IER	A00E	
IFR	A00D	
PCR	A00C	
ACR	A00B	
SR	A00A	
TZCTH	A009	
TZL-L	A008	
TZC-L	A007	
T1L-H	A006	
T1L-L	A005	
T1C-H	A004	
T1L-L	A003	
DATA DIRECTION REGISTER A	A002	
INPUT/OUTPUT REGISTER A (CONTROLS HANDSHAKE)	A001	
INPUT/OUTPUT REGISTER B	A000	

6522 NAME	SYM. PIN #	SYM. PIN NAME
CA1	NOT USED	
CA2	AUTO POWER-ON RESET	
CB2	AUDIO REMOTE CONTROL UNIT	
CR1	NOT USED	

SEE SY6522 DATA SHEET

6522 NAME	SYM. PIN #	SYM. PIN NAME
PA0	A-14	APA0
PA1	A-4	APA1
PA2	A-3	APA2
PA3	A-2	APA3
PA4	A-5	APA4
PA5	A-6	APA5
PA6	A-7	APA6
PA7	A-8	APA7

6522 NAME	SYM. PIN #	SYM. PIN NAME
PB0	A-9	APB0
PB1	A-10	APB1
PB2	A-11	APB2
PB3	A-12	APB3
PB4	A-13	APB4
PB5	A-16	APB5
PB6	(ON BOARD CASSETTE IN)	—
PB7	A-15	APB7

Figure 3. Memory map for SY6522 via #1 (Device U25). (Courtesy Synertek Systems Corporation.)

ing is fairly simple. Figure 3 shows the memory map of the VIA used for bank switching; this should be examined in conjunction with Figure 1. There are two registers that control the flow of data to or from the VIA.

The Data Direction Registers for ports A and B (known respectively as DDRA and DDRB) are used to fix the direction of the data flow. Each of the eight lines is individually capable of being set up as an I/O line. A TTL low in any bit of the DDR causes that line to act as an input line. A TTL high in any bit of the DDR causes that line to act as an output line. Thus to set PB4 to act as an output, we must set the corresponding DDR bit to a TTL high. In order not to disturb the contents of any of the other lines, we set this line by using the ORA command. The sequence used is shown in Figure 4. The section located at label SETHI sets PB4 to a TTL high and the section located at label SETLO sets PB4 to a TTL low.

Bank switching of RAM can be accomplished in much the same manner, using the control signal once again to switch the chip select line in and out of memory space. On the 2114 static RAM chip, for example, this is pin 8, which is also an active low.

I hope these two articles have been of use to the keen crowd out there, and above all, I hope it encourages you to climb into the insides of your computers (after the warranty expires, of course) and find out how they work. □

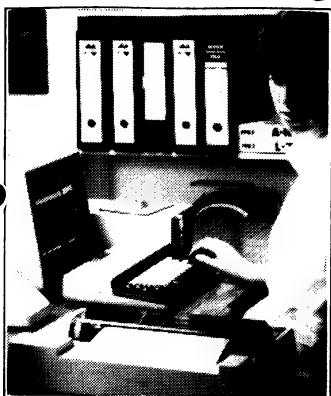
Figure 4.

```

>AS L      0010 ;      BANK SWITCHING ROUTINE      9014- 29 EF      0130      AND ##EF
          0020      .BA $9000      9016- 8D 00 A0      0140 OUTBANK STA PB1
          0030 DDRB1      .DE $A002      9017- 60      0150 END.SWITCH RTS
          0040 PB1      .DE $A000
          0050 BANKHI      LDA DDRB1
          0060      ORA #10
          0070      STA DDRB1
          0080      LDA PB1
          0090      ORA #10
          00A0      STA PB1
          00B0      RTS
          00C0      JSR BANKHI
          00D0      BANKLO
          00E0      BANKHI
          00F0      BANKLO
          0100      BANKHI
          0110      BANKLO
          0120      BANKLO
          0130      BANKHI
          0140      BANKLO
          0150      BANKHI
          0160      BANKLO
          0170      BANKHI
          0180      BANKLO
          0190      BANKHI
          01A0      BANKLO
          01B0      BANKHI
          01C0      BANKLO
          01D0      BANKHI
          01E0      BANKLO
          01F0      BANKHI
          0200      BANKLO
          0210      BANKHI
          0220      BANKLO
          0230      BANKHI
          0240      BANKLO
          0250      BANKHI
          0260      BANKLO
          0270      BANKHI
          0280      BANKLO
          0290      BANKHI
          02A0      BANKLO
          02B0      BANKHI
          02C0      BANKLO
          02D0      BANKHI
          02E0      BANKLO
          02F0      BANKHI
          0300      BANKLO
          0310      BANKHI
          0320      BANKLO
          0330      BANKHI
          0340      BANKLO
          0350      BANKHI
          0360      BANKLO
          0370      BANKHI
          0380      BANKLO
          0390      BANKHI
          03A0      BANKLO
          03B0      BANKHI
          03C0      BANKLO
          03D0      BANKHI
          03E0      BANKLO
          03F0      BANKHI
          0400      BANKLO
          0410      BANKHI
          0420      BANKLO
          0430      BANKHI
          0440      BANKLO
          0450      BANKHI
          0460      BANKLO
          0470      BANKHI
          0480      BANKLO
          0490      BANKHI
          04A0      BANKLO
          04B0      BANKHI
          04C0      BANKLO
          04D0      BANKHI
          04E0      BANKLO
          04F0      BANKHI
          0500      BANKLO
          0510      BANKHI
          0520      BANKLO
          0530      BANKHI
          0540      BANKLO
          0550      BANKHI
          0560      BANKLO
          0570      BANKHI
          0580      BANKLO
          0590      BANKHI
          05A0      BANKLO
          05B0      BANKHI
          05C0      BANKLO
          05D0      BANKHI
          05E0      BANKLO
          05F0      BANKHI
          0600      BANKLO
          0610      BANKHI
          0620      BANKLO
          0630      BANKHI
          0640      BANKLO
          0650      BANKHI
          0660      BANKLO
          0670      BANKHI
          0680      BANKLO
          0690      BANKHI
          06A0      BANKLO
          06B0      BANKHI
          06C0      BANKLO
          06D0      BANKHI
          06E0      BANKLO
          06F0      BANKHI
          0700      BANKLO
          0710      BANKHI
          0720      BANKLO
          0730      BANKHI
          0740      BANKLO
          0750      BANKHI
          0760      BANKLO
          0770      BANKHI
          0780      BANKLO
          0790      BANKHI
          07A0      BANKLO
          07B0      BANKHI
          07C0      BANKLO
          07D0      BANKHI
          07E0      BANKLO
          07F0      BANKHI
          0800      BANKLO
          0810      BANKHI
          0820      BANKLO
          0830      BANKHI
          0840      BANKLO
          0850      BANKHI
          0860      BANKLO
          0870      BANKHI
          0880      BANKLO
          0890      BANKHI
          08A0      BANKLO
          08B0      BANKHI
          08C0      BANKLO
          08D0      BANKHI
          08E0      BANKLO
          08F0      BANKHI
          0900      BANKLO
          0910      BANKHI
          0920      BANKLO
          0930      BANKHI
          0940      BANKLO
          0950      BANKHI
          0960      BANKLO
          0970      BANKHI
          0980      BANKLO
          0990      BANKHI
          09A0      BANKLO
          09B0      BANKHI
          09C0      BANKLO
          09D0      BANKHI
          09E0      BANKLO
          09F0      BANKHI
          0A00      BANKLO
          0A10      BANKHI
          0A20      BANKLO
          0A30      BANKHI
          0A40      BANKLO
          0A50      BANKHI
          0A60      BANKLO
          0A70      BANKHI
          0A80      BANKLO
          0A90      BANKHI
          0AA0      BANKLO
          0AB0      BANKHI
          0AC0      BANKLO
          0AD0      BANKHI
          0AE0      BANKLO
          0AF0      BANKHI
          0B00      BANKLO
          0B10      BANKHI
          0B20      BANKLO
          0B30      BANKHI
          0B40      BANKLO
          0B50      BANKHI
          0B60      BANKLO
          0B70      BANKHI
          0B80      BANKLO
          0B90      BANKHI
          0BA0      BANKLO
          0BB0      BANKHI
          0BC0      BANKLO
          0BD0      BANKHI
          0BE0      BANKLO
          0BF0      BANKHI
          0C00      BANKLO
          0C10      BANKHI
          0C20      BANKLO
          0C30      BANKHI
          0C40      BANKLO
          0C50      BANKHI
          0C60      BANKLO
          0C70      BANKHI
          0C80      BANKLO
          0C90      BANKHI
          0CA0      BANKLO
          0CB0      BANKHI
          0CC0      BANKLO
          0CD0      BANKHI
          0CE0      BANKLO
          0CF0      BANKHI
          0D00      BANKLO
          0D10      BANKHI
          0D20      BANKLO
          0D30      BANKHI
          0D40      BANKLO
          0D50      BANKHI
          0D60      BANKLO
          0D70      BANKHI
          0D80      BANKLO
          0D90      BANKHI
          0DA0      BANKLO
          0DB0      BANKHI
          0DC0      BANKLO
          0DD0      BANKHI
          0DE0      BANKLO
          0DF0      BANKHI
          0E00      BANKLO
          0E10      BANKHI
          0E20      BANKLO
          0E30      BANKHI
          0E40      BANKLO
          0E50      BANKHI
          0E60      BANKLO
          0E70      BANKHI
          0E80      BANKLO
          0E90      BANKHI
          0EA0      BANKLO
          0EB0      BANKHI
          0EC0      BANKLO
          0ED0      BANKHI
          0EE0      BANKLO
          0EF0      BANKHI
          0F00      BANKLO
          0F10      BANKHI
          0F20      BANKLO
          0F30      BANKHI
          0F40      BANKLO
          0F50      BANKHI
          0F60      BANKLO
          0F70      BANKHI
          0F80      BANKLO
          0F90      BANKHI
          0FA0      BANKLO
          0FB0      BANKHI
          0FC0      BANKLO
          0FD0      BANKHI
          0FE0      BANKLO
          0FF0      BANKHI
          1000      BANKLO
          1010      BANKHI
          1020      BANKLO
          1030      BANKHI
          1040      BANKLO
          1050      BANKHI
          1060      BANKLO
          1070      BANKHI
          1080      BANKLO
          1090      BANKHI
          10A0      BANKLO
          10B0      BANKHI
          10C0      BANKLO
          10D0      BANKHI
          10E0      BANKLO
          10F0      BANKHI
          1100      BANKLO
          1110      BANKHI
          1120      BANKLO
          1130      BANKHI
          1140      BANKLO
          1150      BANKHI
          1160      BANKLO
          1170      BANKHI
          1180      BANKLO
          1190      BANKHI
          11A0      BANKLO
          11B0      BANKHI
          11C0      BANKLO
          11D0      BANKHI
          11E0      BANKLO
          11F0      BANKHI
          1200      BANKLO
          1210      BANKHI
          1220      BANKLO
          1230      BANKHI
          1240      BANKLO
          1250      BANKHI
          1260      BANKLO
          1270      BANKHI
          1280      BANKLO
          1290      BANKHI
          12A0      BANKLO
          12B0      BANKHI
          12C0      BANKLO
          12D0      BANKHI
          12E0      BANKLO
          12F0      BANKHI
          1300      BANKLO
          1310      BANKHI
          1320      BANKLO
          1330      BANKHI
          1340      BANKLO
          1350      BANKHI
          1360      BANKLO
          1370      BANKHI
          1380      BANKLO
          1390      BANKHI
          13A0      BANKLO
          13B0      BANKHI
          13C0      BANKLO
          13D0      BANKHI
          13E0      BANKLO
          13F0      BANKHI
          1400      BANKLO
          1410      BANKHI
          1420      BANKLO
          1430      BANKHI
          1440      BANKLO
          1450      BANKHI
          1460      BANKLO
          1470      BANKHI
          1480      BANKLO
          1490      BANKHI
          14A0      BANKLO
          14B0      BANKHI
          14C0      BANKLO
          14D0      BANKHI
          14E0      BANKLO
          14F0      BANKHI
          1500      BANKLO
          1510      BANKHI
          1520      BANKLO
          1530      BANKHI
          1540      BANKLO
          1550      BANKHI
          1560      BANKLO
          1570      BANKHI
          1580      BANKLO
          1590      BANKHI
          15A0      BANKLO
          15B0      BANKHI
          15C0      BANKLO
          15D0      BANKHI
          15E0      BANKLO
          15F0      BANKHI
          1600      BANKLO
          1610      BANKHI
          1620      BANKLO
          1630      BANKHI
          1640      BANKLO
          1650      BANKHI
          1660      BANKLO
          1670      BANKHI
          1680      BANKLO
          1690      BANKHI
          16A0      BANKLO
          16B0      BANKHI
          16C0      BANKLO
          16D0      BANKHI
          16E0      BANKLO
          16F0      BANKHI
          1700      BANKLO
          1710      BANKHI
          1720      BANKLO
          1730      BANKHI
          1740      BANKLO
          1750      BANKHI
          1760      BANKLO
          1770      BANKHI
          1780      BANKLO
          1790      BANKHI
          17A0      BANKLO
          17B0      BANKHI
          17C0      BANKLO
          17D0      BANKHI
          17E0      BANKLO
          17F0      BANKHI
          1800      BANKLO
          1810      BANKHI
          1820      BANKLO
          1830      BANKHI
          1840      BANKLO
          1850      BANKHI
          1860      BANKLO
          1870      BANKHI
          1880      BANKLO
          1890      BANKHI
          18A0      BANKLO
          18B0      BANKHI
          18C0      BANKLO
          18D0      BANKHI
          18E0      BANKLO
          18F0      BANKHI
          1900      BANKLO
          1910      BANKHI
          1920      BANKLO
          1930      BANKHI
          1940      BANKLO
          1950      BANKHI
          1960      BANKLO
          1970      BANKHI
          1980      BANKLO
          1990      BANKHI
          19A0      BANKLO
          19B0      BANKHI
          19C0      BANKLO
          19D0      BANKHI
          19E0      BANKLO
          19F0      BANKHI
          1A00      BANKLO
          1A10      BANKHI
          1A20      BANKLO
          1A30      BANKHI
          1A40      BANKLO
          1A50      BANKHI
          1A60      BANKLO
          1A70      BANKHI
          1A80      BANKLO
          1A90      BANKHI
          1AA0      BANKLO
          1AB0      BANKHI
          1AC0      BANKLO
          1AD0      BANKHI
          1AE0      BANKLO
          1AF0      BANKHI
          1B00      BANKLO
          1B10      BANKHI
          1B20      BANKLO
          1B30      BANKHI
          1B40      BANKLO
          1B50      BANKHI
          1B60      BANKLO
          1B70      BANKHI
          1B80      BANKLO
          1B90      BANKHI
          1BA0      BANKLO
          1BB0      BANKHI
          1BC0      BANKLO
          1BD0      BANKHI
          1BE0      BANKLO
          1BF0      BANKHI
          1C00      BANKLO
          1C10      BANKHI
          1C20      BANKLO
          1C30      BANKHI
          1C40      BANKLO
          1C50      BANKHI
          1C60      BANKLO
          1C70      BANKHI
          1C80      BANKLO
          1C90      BANKHI
          1CA0      BANKLO
          1CB0      BANKHI
          1CC0      BANKLO
          1CD0      BANKHI
          1CE0      BANKLO
          1CF0      BANKHI
          1D00      BANKLO
          1D10      BANKHI
          1D20      BANKLO
          1D30      BANKHI
          1D40      BANKLO
          1D50      BANKHI
          1D60      BANKLO
          1D70      BANKHI
          1D80      BANKLO
          1D90      BANKHI
          1DA0      BANKLO
          1DB0      BANKHI
          1DC0      BANKLO
          1DD0      BANKHI
          1DE0      BANKLO
          1DF0      BANKHI
          1E00      BANKLO
          1E10      BANKHI
          1E20      BANKLO
          1E30      BANKHI
          1E40      BANKLO
          1E50      BANKHI
          1E60      BANKLO
          1E70      BANKHI
          1E80      BANKLO
          1E90      BANKHI
          1EA0      BANKLO
          1EB0      BANKHI
          1EC0      BANKLO
          1ED0      BANKHI
          1EE0      BANKLO
          1EF0      BANKHI
          1F00      BANKLO
          1F10      BANKHI
          1F20      BANKLO
          1F30      BANKHI
          1F40      BANKLO
          1F50      BANKHI
          1F60      BANKLO
          1F70      BANKHI
          1F80      BANKLO
          1F90      BANKHI
          1FA0      BANKLO
          1FB0      BANKHI
          1FC0      BANKLO
          1FD0      BANKHI
          1FE0      BANKLO
          1FF0      BANKHI
          2000      BANKLO
          2010      BANKHI
          2020      BANKLO
          2030      BANKHI
          2040      BANKLO
          2050      BANKHI
          2060      BANKLO
          2070      BANKHI
          2080      BANKLO
          2090      BANKHI
          20A0      BANKLO
          20B0      BANKHI
          20C0      BANKLO
          20D0      BANKHI
          20E0      BANKLO
          20F0      BANKHI
          2100      BANKLO
          2110      BANKHI
          2120      BANKLO
          2130      BANKHI
          2140      BANKLO
          2150      BANKHI
          2160      BANKLO
          2170      BANKHI
          2180      BANKLO
          2190      BANKHI
          21A0      BANKLO
          21B0      BANKHI
          21C0      BANKLO
          21D0      BANKHI
          21E0      BANKLO
          21F0      BANKHI
          2200      BANKLO
          2210      BANKHI
          2220      BANKLO
          2230      BANKHI
          2240      BANKLO
          2250      BANKHI
          2260      BANKLO
          2270      BANKHI
          2280      BANKLO
          2290      BANKHI
          22A0      BANKLO
          22B0      BANKHI
          22C0      BANKLO
          22D0      BANKHI
          22E0      BANKLO
          22F0      BANKHI
          2300      BANKLO
          2310      BANKHI
          2320      BANKLO
          2330      BANKHI
          2340      BANKLO
          2350      BANKHI
          2360      BANKLO
          2370      BANKHI
          2380      BANKLO
          2390      BANKHI
          23A0      BANKLO
          23B0      BANKHI
          23C0      BANKLO
          23D0      BANKHI
          23E0      BANKLO
          23F0      BANKHI
          2400      BANKLO
          2410      BANKHI
          2420      BANKLO
          2430      BANKHI
          2440      BANKLO
          2450      BANKHI
          2460      BANKLO
          2470      BANKHI
          2480      BANKLO
          2490      BANKHI
          24A0      BANKLO
          24B0      BANKHI
          24C0      BANKLO
          24D0      BANKHI
          24E0      BANKLO
          24F0      BANKHI
          2500      BANKLO
          2510      BANKHI
          2520      BANKLO
          2530      BANKHI
          2540      BANKLO
          2550      BANKHI
          2560      BANKLO
          2570      BANKHI
          2580      BANKLO
          2590      BANKHI
          25A0      BANKLO
          25B0      BANKHI
          25C0      BANKLO
          25D0      BANKHI
          25E0      BANKLO
          25F0      BANKHI
          2600      BANKLO
          2610      BANKHI
          2620      BANKLO
          2630      BANKHI
          2640      BANKLO
          2650      BANKHI
          2660      BANKLO
          2670      BANKHI
          2680      BANKLO
          2690      BANKHI
          26A0      BANKLO
          26B0      BANKHI
          26C0      BANKLO
          26D0      BANKHI
          26E0      BANKLO
          26F0      BANKHI
          2700      BANKLO
          2710      BANKHI
          2720      BANKLO
          2730      BANKHI
          2740      BANKLO
          2750      BANKHI
          2760      BANKLO
          2770      BANKHI
          2780      BANKLO
          2790      BANKHI
          27A0      BANKLO
          27B0      BANKHI
          27C0      BANKLO
          27D0      BANKHI
          27E0      BANKLO
          27F0      BANKHI
          2800      BANKLO
          2810      BANKHI
          2820      BANKLO
          2830      BANKHI
          2840      BANKLO
          2850      BANKHI
          2860      BANKLO
          2870      BANKHI
          2880      BANKLO
          2890      BANKHI
          28A0      BANKLO
          28B0      BANKHI
          28C0      BANKLO
          28D0      BANKHI
          28E0      BANKLO
          28F0      BANKHI
          2900      BANKLO
          2910      BANKHI
          2920      BANKLO
          2930      BANKHI
          2940      BANKLO
          2950      BANKHI
          2960      BANKLO
          2970      BANKHI
          2980      BANKLO
          2990      BANKHI
          29A0      BANKLO
          29B0      BANKHI
          29C0      BANKLO
          29D0      BANKHI
          29E0      BANKLO
          29F0      BANKHI
          2A00      BANKLO
          2A10      BANKHI
          2A20      BANKLO
          2A30      BANKHI
          2A40      BANKLO
          2A50      BANKHI
          2A60      BANKLO
          2A70      BANKHI
          2A80      BANKLO
          2A90      BANKHI
          2AA0      BANKLO
          2AB0      BANKHI
          2AC0      BANKLO
          2AD0      BANKHI
          2AE0      BANKLO
          2AF0      BANKHI
          2B00      BANKLO
          2B10      BANKHI
          2B20      BANKLO
          2B30      BANKHI
          2B40      BANKLO
          2B50      BANKHI
          2B60      BANKLO
          2B70      BANKHI
          2B80      BANKLO
          2B90      BANKHI
          2BA0      BANKLO
          2BB0      BANKHI
          2BC0      BANKLO
          2BD0      BANKHI
          2BE0      BANKLO
          2BF0      BANKHI
          2C00      BANKLO
          2C10      BANKHI
          2C20      BANKLO
          2C30      BANKHI
          2C40      BANKLO
          2C50      BANKHI
          2C60      BANKLO
          2C70      BANKHI
          2C80      BANKLO
          2C90      BANKHI
          2CA0      BANKLO
          2CB0      BANKHI
          2CC0      BANKLO
          2CD0      BANKHI
          2CE0      BANKLO
          2CF0      BANKHI
          2D00      BANKLO
          2D10      BANKHI
          2D20      BANKLO
          2D30      BANKHI
          2D40      BANKLO
          2D50      BANKHI
          2D60      BANKLO
          2D70      BANKHI
          2D80      BANKLO
          2D90      BANKHI
          2DA0      BANKLO
          2DB0      BANKHI
          2DC0      BANKLO
          2DD0      BANKHI
          2DE0      BANKLO
          2DF0      BANKHI
          2E00      BANKLO
          2E10      BANKHI
          2E20      BANKLO
          2E30      BANKHI
          2E40      BANKLO
          2E50      BANKHI
          2E60      BANKLO
          2E70      BANKHI
          2E80      BANKLO
          2E90      BANKHI
          2EA0      BANKLO
          2EB0      BANKHI
          2EC0      BANKLO
          2ED0      BANKHI
          2EE0      BANKLO
          2EF0      BANKHI
          2F00      BANKLO
          2F10      BANKHI
          2F20      BANKLO
          2F30      BANKHI
          2F40      BANKLO
          2F50      BANKHI
          2F60      BANKLO
          2F70      BANKHI
          2F80      BANKLO
          2F90      BANKHI
          2FA0      BANKLO
          2FB0      BANKHI
          2FC0      BANKLO
          2FD0      BANKHI
          2FE0      BANKLO
          2FF0      BANKHI
          3000      BANKLO
          3010      BANKHI
          3020      BANKLO
          3030      BANKHI
          3040      BANKLO
          3050      BANKHI
          3060      BANKLO
          3070      BANKHI
          3080      BANKLO
          3090      BANKHI
          30A0      BANKLO
          30B0      BANKHI
          30C0      BANKLO
          30D0      BANKHI
          30E0      BANKLO
          30F0      BANKHI
          3100      BANKLO
          3110      BANKHI
          3120      BANKLO
          3130      BANKHI
          3140      BANKLO
          3150      BANKHI
          3160      BANKLO
          3170      BANKHI
          3180      BANKLO
          3190      BANKHI
          31A0      BANKLO
          31B0      BANKHI
          31C0      BANKLO
          31D0      BANKHI
          31E0      BANKLO
          31F0      BANKHI
          3200      BANKLO
          3210      BANKHI
          3220      BANKLO
          3230      BANKHI
          3240      BANKLO
          3250      BANKHI
          3260      BANKLO
          3270      BANKHI
          3280      BANKLO
          3290      BANKHI
          32A0      BANKLO
          32B0      BANKHI
          32C0      BANKLO
          32D0      BANKHI
          32E0      BANKLO
          32F0      BANKHI
          3300      BANKLO
          3310      BANKHI
          3320      BANKLO
          3330      BANKHI
          3340      BANKLO
          3350      BANKHI
          3360      BANKLO
          3370      BANKHI
          3380      BANKLO
          3390      BANKHI
          33A0      BANKLO
          33B0      BANKHI
          33C0      BANKLO
          33D0      BANKHI
          33E0      BANKLO
          33F0      BANKHI
          3400      BANKLO
          3410      BANKHI
          3420      BANKLO
          3430      BANKHI
          3440      BANKLO
          3450      BANKHI
          3460      BANKLO
          3470      BANKHI
          3480      BANKLO
          3490      BANKHI
          34A0      BANKLO
          34B0      BANKHI
          34C0      BANKLO
          34D0      BANKHI
          34E0      BANKLO
          34F0      BANKHI
          3500      BANKLO
          3510      BANKHI
          3520      BANKLO
          3530      BANKHI
          3540      BANKLO
          3550      BANKHI
          3560      BANKLO
          3570      BANKHI
          3580      BANKLO
          3590      BANKHI
          35A0      BANKLO
          35B0      BANKHI
          35C0      BANKLO
          35D0      BANKHI
          35E0      BANKLO
          35F0      BANKHI
          3600      BANKLO
          3610      BANKHI
          3620      BANKLO
          3630      BANKHI
          3640      BANKLO
          3650      BANKHI
          3660      BANKLO
          3670      BANKHI
          3680      BANKLO
          3690      BANKHI
          36A0      BANKLO
          36B0      BANKHI
          36C0      BANKLO
          36D0      BANKHI
          36E0      BANKLO
          36F0      BANKHI
          3700      BANKLO
          3710      BANKHI
          3720      BANKLO
          3730      BANKHI
          3740      BANKLO
          3750      BANKHI
          3760      BANKLO
          3770      BANKHI
          3780      BANKLO
          3790      BANKHI
          37A0      BANKLO
          37B0      BANKHI
          37C0      BANKLO
          37D0      BANKHI
          37E0      BANKLO
          37F0      BANKHI
          3800      BANKLO
          3810      BANKHI
          3820      BANKLO
          3830      BANKHI
          3840      BANKLO
          3850      BANKHI
          3860      BANKLO
          3870      BANKHI
          3880      BANKLO
          3890      BANKHI
          38A0      BANKLO
          38B0      BANKHI
          38C0      BANKLO
          38D0      BANKHI
          38E0      BANKLO
          38F0      BANKHI
          3900      BANKLO
          3910      BANKHI
          3920      BANKLO
          3930      BANKHI
          3940      BANKLO
          3950      BANKHI
          3960      BANKLO
          3970      BANKHI
          3980      BANKLO
          3990      BANKHI
          39A0      BANKLO
          39B0      BANKHI
          39C0      BANKLO
          39D0      BANKHI
          39E0      BANKLO
          39F0      BANKHI
          3A00      BANKLO
          3A10      BANKHI
          3A20      BANKLO
          3A30      BANKHI
          3A40      BANKLO
          3A50      BANKHI
          3A60      BANKLO
          3A70      BANKHI
          3A80      BANKLO
          3A90      BANKHI
          3AA0      BANKLO
          3AB0      BANKHI
          3AC0      BANKLO
          3AD0      BANKHI
          3AE0      BANKLO
          3AF0      BANKHI
          3B00      BANKLO
          3B10      BANKHI
          3B20      BANKLO
          3B30      BANKHI
          3B40      BANKLO
          3B50      BANKHI
          3B60      BANKLO
          3B70      BANKHI
          3B80      BANKLO
          3B90      BANKHI
          3BA0      BANKLO
          3BB0      BANKHI
          3BC0      BANKLO
          3BD0      BANKHI
          3BE0      BANKLO
          3BF0      BANKHI
          3C00      BANKLO
          3C10      BANKHI
          3C20      BANKLO
          3C30      BANKHI
          3C40      BANKLO
          3C50      BANKHI
          3C60      BANKLO
          3C70      BANKHI
          3C80      BANKLO
          3C90      BANKHI
          3CA0      BANKLO
          3CB0      BANKHI
          3CC0      BANKLO
          3CD0      BANKHI
          3CE0      BANKLO
          3CF0      BANKHI
          3D00      BANKLO
          3D10      BANKHI
          3D20      BANKLO
          3D30      BANKHI
          3D40      BANKLO
          3D50      BANKHI
          3D60      BANKLO
          3D70      BANKHI
          3D80      BANKLO
          3D90      BANKHI
          3DA0      BANKLO
          3DB0      BANKHI
          3DC0      BANKLO
          3DD0      BANKHI
          3DE0      BANKLO
          3DF0      BANKHI
          3E00      BANKLO
          3E10      BANKHI
          3E20      BANKLO
          3E30      BANKHI
          3E40      BANKLO
          3E50      BANKHI
          3E60      BANKLO
          3E70      BANKHI
          3E80      BANKLO
          3E90      BANKHI
          3EA0      BANKLO
          3EB0      BANKHI
          3EC0      BANKLO
          3ED0      BANKHI
          3EE0      BANKLO
          3EF0      BANKHI
          3F00      BANKLO
          3F10      BANKHI
          3F20      BANKLO
          3F30      BANKHI
          3F40      BANKLO
          3F50      BANKHI
          3F60      BANKLO
          3F70      BANKHI
          3F80      BANKLO
          3F90      BANKHI
          3FA0      BANKLO
          3FB0      BANKHI
          3FC0      BANKLO
          3FD0      BANKHI
          3FE0      BANKLO
          3FF0      BANKHI
          4000      BANKLO
          4010      BANKHI
          4020      BANKLO
          4030      BANKHI
          4040      BANKLO
          4050      BANKHI
          4060      BANKLO
          4070      BANKHI
          4080      BANKLO
          4090      BANKHI
          40A0      BANKLO
          40B0      BANKHI
          40C0      BANKLO
          40D0      BANKHI
          40E0      BANKLO
          40F0      BANKHI
          4100      BANKLO
          4110      BANKHI
          41
```



SERIES 2 PERSONAL COMMUNICATOR



microbee Series 2 PERSONAL COMMUN- ICATOR

Now ready for 1984 (watch out George Orwell, big brother is watching with envy!), the microbee Series 2 Personal Communicator has been designed to meet the needs of modern times. It has BUILT-IN WORDBEE in ROM as well as MICROWORLD BASIC and NETWORKING.

The Personal Communicator is a powerful home computer ideal for virtually any home use from wordprocessing,

spreadsheet analysis, education and even experimentation with the computer concepts as they evolve during the year.

With the optional BEEMODEM you can send WORDBEE files across any telephone line to another computer. Bee the first on your block to have home telex!

A big feature of the Personal Communicator is the use of battery-backed CMOS RAM so that programs can be stored even when the power has been disconnected. This is particularly useful with WORDBEE or BASIC files which can be developed at home and then the computer can be taken to the school or office for printout. Of course the MICROWORLD BASIC is also built-in to your Personal Communicator so you can run any of the software developed for any microbee to date.

In fact, the Personal Communicator is also the Experimenter and Educator microbees fully expanded. You have the features of every machine. If your needs grow you may consider expanding your Communicator to the Advanced Personal Computer using disk drives. Ask your local microbee shop for details.

Specifications:

PROCESSOR: Z80A running at 3.375 MHZ

KEYBOARD: 60 key FULL SIZED QWERTY layout with full travel.

MEMORY: 68K comprising of 32K user RAM 28K ROM software, 4K character ROM, 4K graphics and screen memory.

DISPLAY: Direct video to external monitor or modified TV. 80 by 24 and 64 by 16 character display modes, high resolution PCG graphics to 512 by 256 pixels. Upper and lower case with full programmability at any screen location.

SOFTWARE: MICROWORLD 16K BASIC V5.22 in ROM, MICROWORLD Z80 machine code monitor, built-in diagnostics, NETWORKING with programmable baud rates from 110 to 4800 Baud, 7, 8 bit formats, half, full duplex transmission and complete file transfer using the 'HOBBY' standard Christensen protocol.

INPUT/OUTPUT: Programmable 8 bit input/output parallel port, programmable RS232 port, cassette interface, direct video, 50 way Z80 expansion bus.

Recommended Options:

microbee HIGH RESOLUTION

MONITOR \$199.00

BEEMODEM \$149.50

RGB COLOUR MODULE \$125.00

microbee PRINTER \$449.00

Other Personal Computers in the Microbee Series 2 range — all with guaranteed E-X-P-A-N-D-A-B-I-L-I-T-Y

**microbee
EXPERIMENTER \$399**

The low cost microbee Series 2 Experimenter has been designed for those starting out in the fascinating world of computers or those who want to explore the exciting developments in the fast moving MICROWORLD.

**microbee
EDUCATOR \$449**

The microbee Series 2 Educator was specifically designed to serve the needs of the education market, to increase our learning capabilities either about computers or about life itself. In constant use in schools universities and technical colleges throughout Australia and New Zealand.





microbee Series 2 ADVANCED PERSONAL COMPUTER

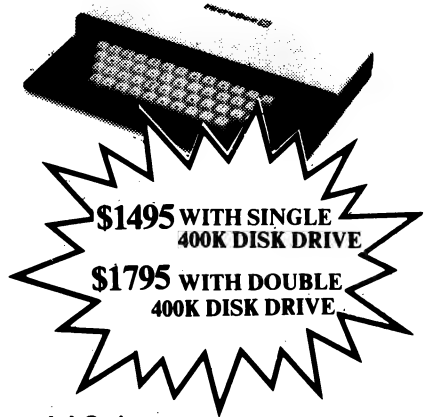
Now for the first time in Australia: the microbee Series 2 Advanced Personal Computer with 400K disk drive for \$995.00 (including sales tax)! Then add bundled world class software such as CP/M, MICROSOFT BASIC, MULTIPLAN, WORDSTAR and a powerful library of support programs for \$500.00 and you will have some idea as to why the microbee Series 2 Advanced Personal Computer is the most powerful and best price/performance computer in its class. What's more any existing microbee owner can convert his microbee to the Series 2 APC at any time

SERIES 2 ADVANCED PERSONAL COMPUTER

The microbee Series 2 APC uses the popular Z80 microprocessor and runs standard CP/M so that users have access to the vast library of CP/M software available world wide. MICROSOFT BASIC is now supplied on disk. WORDSTAR, according to independent surveys now accounts for 50% of all word processing software now in use so the designers of the Series 2 APC decided to purchase the OEM rights for your benefit. MULTIPLAN is considered by many to be one of the most powerful spreadsheets yet produced for the microcomputer.

You can expand your microbee Series 2 APC to drive 2 or more disk drives. A hard disk drive unit is now operational and will release soon. Watch the magazines for news of the 128K/controller board for the Series 2 APC and the 16 bit expansion policies.

Your microbee Series 2 APC is a world class machine from the hardware as well as the software point of view. The exclusive SETDRIVE utility will convert your disk system to read diskettes from other computers such as OSBORNE, KAYPRO, BBC, and a host of others! The Series 2 APC is also equipped with VIRTUAL DRIVE capability. This means single disk owners can readily copy from A to B using only one drive. Another world first is the CONFIG program which enables a Series 2 APC user to reCONFIGure his CP/M system to select screen positioning, background and foreground colour, parallel and serial printers disk drive information and even auto-start disks.



Recommended Options:

ADDITIONAL DISK DRIVE	\$300.00
microbee HIGH RESOLUTION MONITOR	\$199.00
BEEMODEM	\$149.50
RGB COLOUR MODULE	\$125.00
microbee PRINTER	\$449.00
128K EXPANSION UNIT (Soon to be released)	

Specifications:

PROCESSOR: Z80A running at 3.375 MHZ

KEYBOARD: 60 key FULL SIZED
QWERTY layout with full travel.

MEMORY: 64K comprising of 8K ROM, 4k
graphics and screen memory.

DISPLAY: Direct video to external monitor
or modified TV. 80 by 24 and 64 by 16
character display modes, high resolution PCG
graphics to 512 by 256 pixels. Upper and lower
case with full programmability at any screen
location.

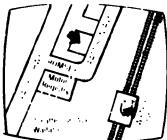
SOFTWARE: CP/M 2.2, MICROSOFT
BASIC-80, WORDSTAR 3.0, MULTIPLAN
V1.05, MICROWORLD BASIC V6.0,
WORDBEE, EDASM, CP/M UTILITIES,
COMMUNICATIONS PACKAGE,
MICROWORLD SUPPORT LIBRARY.

INPUT/OUTPUT: Programmable 8 bit
input/output parallel port, programmable RS232
port, cassette interface, direct video.

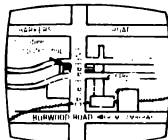
Well mannered, friendly personal computers that start you computing and expand to keep pace with your needs, providing challenges and encouragement at each stage of your computing development.

AVAILABLE FROM

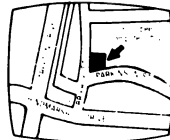
microbee computer shops



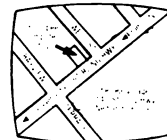
1 Pattison Ave,
Waitara 2077.
Phone (02) 487 2711



729 Glenferrie Rd,
Hawthorn 3122.
Phone (03) 818 2244



Coleman Court,
Weston A.C.T. 2611.
Phone (062) 88 6384



141 Stirling Highway,
Nedlands, Perth.
Phone (09) 386 8250

Authorised Dealers:

NSW: Jaycar, (inc. Electronic Agencies)
117 York Street, Sydney.
115 Parramatta Road, Concord.
121 Forest Road, Hurstville.
Cnr Carlingford and Pennant Hills
Road, Carlingford.
Compu-K, 7 Casino Street, Lismore.
Comput/Ed, 8 Park Arcade,
Park Avenue, Coffs Harbour.

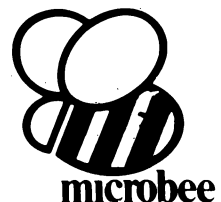
ACT: Computech, Belconnen Churches
Centre, Benjamin Way, Belconnen.
VIC: Computerland South Melbourne,
37 Albert Road, Melbourne.
S.A.: Key Computers,
1061 South Road, Edwardstown.
77 Grenfell Street, Adelaide.
W.A.: Altronics, 105 Stirling Street,
Perth.

QLD: Software 80, 105 Milton Road,
Milton.
Electrographic Office Systems,
25 Grafton Street, Cairns.
Town and Country Computers,
CTL Centre, Anne Street, Aitkenvale,
Townsville.
TAS: Central Data, 14A Goodwin
Street, Launceston.



DIRECT ORDERS
PHONE (02) 487 2711

APPLIED
TECHNOLOGY
RETAIL
PTY LTD



Getting dBest From dBase

Part V

This month Les Bell continues his dBase tutorial with a look at the various parameters which control the operation of this popular database system.

THE OPERATION OF dBase can be varied in many subtle ways. For example, you may not like the way APPEND displays colons at the end of fields, or may not like the way the system beeps and moves on to the next field whenever the current field is full.

These attributes can be altered by use of a number of parameters which are described in the dBase manuals. There are over twenty of them, but they all work in the same way. The key to their use is the SET command.

SET and Parameters

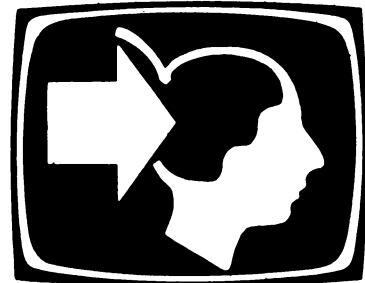
The SET command takes two forms:

```
SET <parm1> [ON]
           [OFF]
```

which allows toggled parameters to be switched on or off, and

```
SET <parm2> TO <opt>
```

your computer



tutorial

which allows those parameters that need one of the different strings described below to have its value altered.

Probably the most important parameters for the beginning dBase programmer are those which assist in debugging. The first of these is the TALK parameter, which defaults to ON. Whenever a value is stored to a memory variable, that value is displayed on the screen, unless TALK is set off.

The result of this is that running programs will produce a stream of intermediate values on the screen, which will

confuse the user (not to mention the programmer) and screw up beautifully designed screen displays. So the first line of most programs is usually

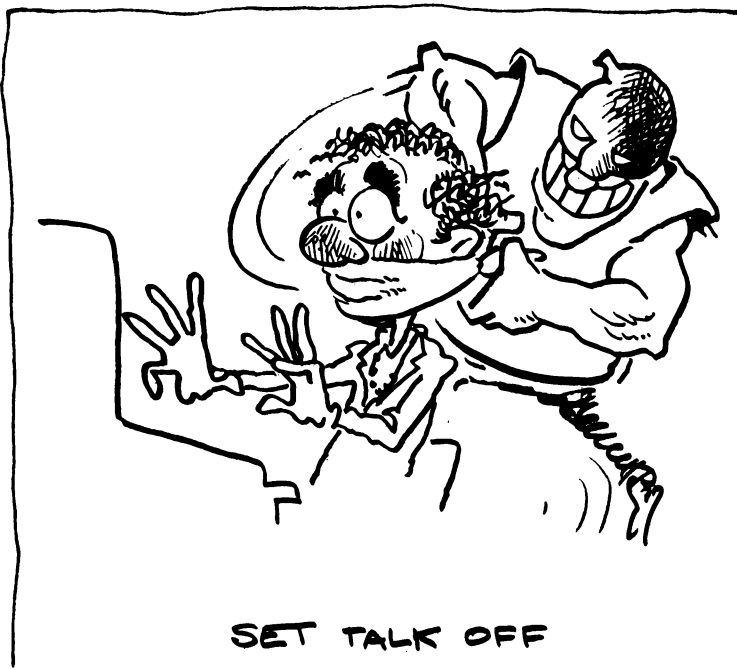
SET TALK OFF
which disables this feature.

The ECHO parameter is also useful in debugging. With ECHO set on, all commands which are read from a command file are also displayed on the screen. ECHO defaults to OFF. In effect, this is a trace facility for tracking program execution.

A similar facility is provided by the DEBUG parameter; with this set on, lines of command files are sent to the printer as they are executed. This avoids messing up screen displays. Again, DEBUG defaults to OFF.

An even more useful facility for tracking down bugs is the STEP parameter. With STEP set ON, the system will execute a single line of a command file at a time, then halt and wait while the user examines memory variables or enters other command lines, or quits the command file or continues. Again, STEP defaults to OFF.

The next group of parameters control where output goes. Like Unix, dBase provides a facility for redirectible I/O,



and treats devices and files alike – at least as far as output is concerned. Generally, output defaults to the console device, but that can be changed where necessary.

The three parameters concerned are CONSOLE, PRINT and ALTERNATE. SET CONSOLE ON will direct output to the screen, which is the usual selection and the default. Setting CONSOLE OFF does have its uses, though, as we shall see.

PRINT is usually set OFF, but with it set ON, any LISTs or DISPLAYs will produce output on the printer.

Finally, the user may wish to direct a report or other output to a disk file for subsequent editing or processing by another program. This is achieved with the ALTERNATE parameter. Two forms of SET ALTERNATE are involved. The first, SET ALTERNATE TO <filename> sets up the name of the file to which the output will be sent. SET ALTERNATE ON then starts collection of output in the disk file, and SET ALTERNATE OFF stops it.

There are several uses for these commands. For example, it is common to use the WAIT TO <memvar> command to input a single-character menu choice from the user. The only trouble is that the WAIT command produces a WAITING message on the screen, which most (well, some) programmers find aesthetically offensive. This code segment gets around that:

```
* Suppress screen output
SET CONSOLE OFF
* Accept input character
WAIT TO choice
```

* Enable output again
SET CONSOLE ON

Similarly, some programmers like to disguise the fact they wrote an application in dBase by suppressing the dBase sign-off message:

```
SET CONSOLE OFF
QUIT
```

Of course, they also rename DBase.COM to RUN.COM or similar, and the user thinks he's hired a hotshot CBASIC-2 programmer!

SET ALTERNATE has a number of uses, such as sending reports to disk files. It's also possible to create skeletal MailMerge letters and other text files by using SET ALTERNATE. For example, COPY STRUCTURE EXTENDED can be used to create a database containing the field names of the current database, and then a short dBase program can be used to produce a text file containing the appropriate .RV <fieldname> lines for MailMerge. This is more a matter of ingenuity than programming style, however. In addition, SET ALTERNATE can be used to produce audit trails.

Some parameters affect the full screen editing operations of dBase, such as APPEND, EDIT and CREATE. First, those unfortunate souls who do not have terminals with cursor addressing can implement a line-oriented version of dBase with the command:

```
SET SCREEN OFF
```

Naturally, it defaults to ON. This line-oriented version is truly dreadful to use. No further comment.

dBase screens generally use colons to delimit fields, so that the user can see how much space he/she has to type in

names or other long data. However, if one designs a menu as a format screen with a single character input field, the colons are a bit of a giveaway as to how it was done, and are also none too aesthetically pleasing.

The SET COLON OFF command will get rid of them. SET COLON ON will display them again, and this is the default mode.

Don't Like The Beeps?

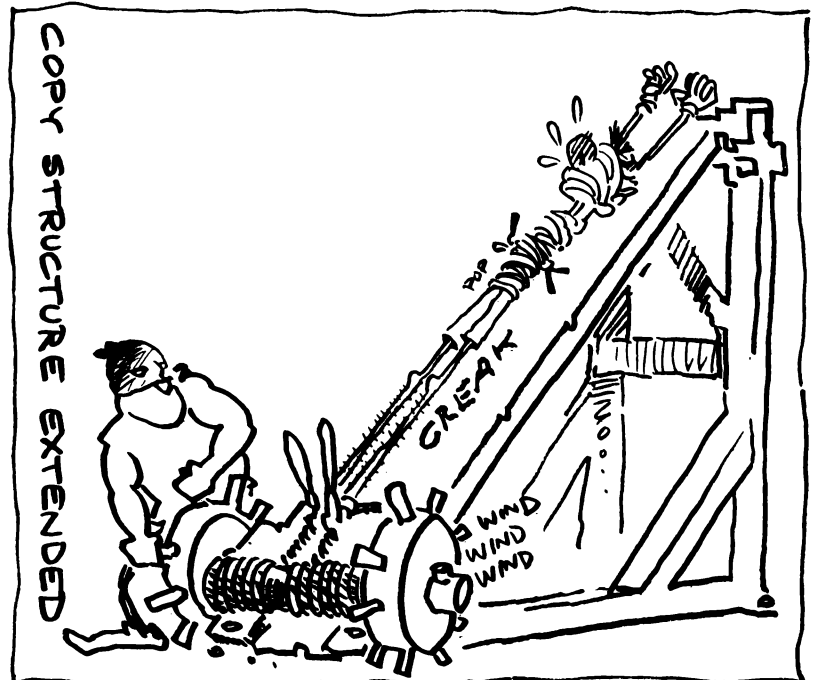
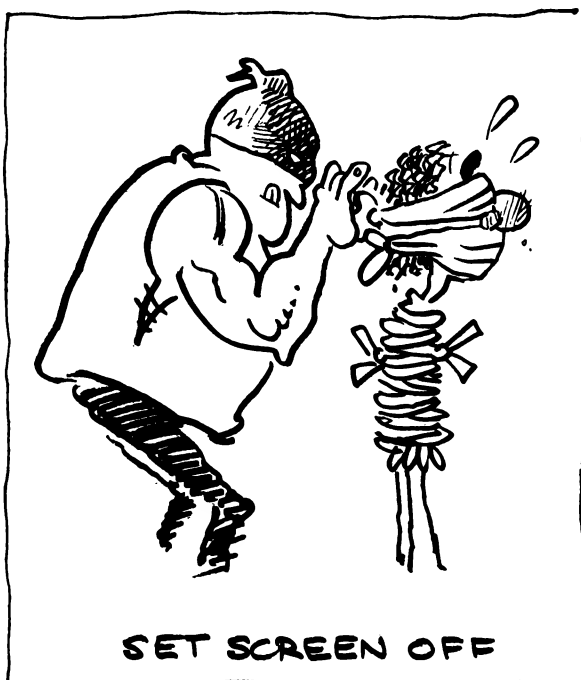
One default of dBase's that I don't particularly like is the way that when the user fills a field during append or edit, it simply goes on to the next field with a beep. When you're typing fast (and most data entry operators are fast), by the time you recognise the beep, you've filled half the next field with overflow from the current one.

SET CONFIRM ON gets rid of the problem. Now dBase will not proceed to the next field until you explicitly hit <CR>. It will still beep when a field is filled up, however, which is sensible.

If you find that all the beeping is driving your office neighbours up the wall, you can suppress the beeping with (here we go again) SET BELL OFF. It defaults to ON.

Some computers, like the Kaypro II, do not have half intensity video, and are in fact sent a little crazy by the nulls that dBase transmits in place of the absent half intensity sequences. The Kaypro displays lots of apostrophes in the middle of forms, for example.

Such machines can be sorted out by SET INTENSITY OFF (it defaults to ON).



ONE MONTH ONLY

WHILE STOCKS LAST!

**FREE BUSINESS SOFTWARE WITH
EVERY PURCHASE OF A
BUSINESS COMPUTER!!!**
(OVER \$2000)



FOR EXAMPLE
**HITACHI LEVEL 4
COMPUTER**

GENERAL LEDGER
DEBTORS
CREDITORS
INVENTORY WITH INVOICES
HI-WRITER-WORD PROCESSOR
PRO-CALC-VISUAL CALCULATOR
(\$1200 VALUE)

LEVEL 4 CP/M
64K RAM MEMORY
Hi-RES GREEN SCREEN
(NOT AS SHOWN)
2 x 5 1/4" 400K6 DISK DRIVES
KAYPRO 4 COMPATIBLE
UPGRADEABLE TO 8" DRIVES
TOTAL PACKAGE NORMALLY \$4595

**YOU PAY ONLY
\$3395**

PRINTERS AVAILABLE FROM \$499

**OFFER AVAILABLE ON MANY BRANDS OF COMPUTERS
CALL US NOW FOR A PRICE!**

OTHER BUSINESS SOFTWARE AVAILABLE, POINT OF SALE COMPUTER CONTROL
FOR VIDEO STORES, HI-FI STORES, LIQUOR SHOPS, BOOK STORES, CASH BOOK
AND INVENTORY CONTROL FOR MOTOR PARTS AND MANY, MANY MORE.
(SQUASH COURTS AND INDOOR CRICKET PROGRAMS).



COMPUTERS
COMPUTER CONSULTANTS

477 PACIFIC HIGHWAY, CROWS NEST. 43-2771
ALSO AT: TAMWORTH 66-3162 • ARMIDALE 72-5059 • BATHURST 31-4686

It often happens that a lot of data entry text is repeated. For example, in entering orders, the one product may dominate entirely, so that the user is perpetually typing the same information. The CARRY parameter can save work here.

SET CARRY ON will carry the information from the last APPEND form onto the current one, so that instead of entering completely new data, the user can simply edit the data carried over from the last screen. It doesn't always work out to be that much more efficient, but on occasions it can save a lot of effort and errors.

Finally, dBase normally inserts a space between fields when records are LISTed or DISPLAYed, just so the user can sort them out. SET RAW ON eliminates these spaces, so that fields are concatenated directly.

A couple of parameters control the way the database record pointer is positioned. The first one helps to get around the fundamental 32-field limitation of dBase by letting the user link two databases to form one with 64-fields.

SET LINKAGE ON makes all dBase's sequential commands such as LIST, REPORT and SUM (that is, commands that have a scope parameter) perform positioning on both the primary and secondary databases. It defaults to OFF. I must admit that I've never had a great deal of success with this command; maybe I'm missing something, although I also believe there were bugs associated with it in the early versions of dBase.

The FIND command normally makes string comparisons up to and including the last character of the FIND param-

your computer



tutorial

eter, but not beyond. Thus, FIND SMITH will match SMITH and also SMITHSON, SMITHY and no doubt others.

With SET EXACT ON, both strings must be the same length, so that FIND SMITH will only match a field containing SMITH. It defaults to OFF.

With dBase 2.4, a new parameter has been added to control the way deleted records are treated. dBase 2.3 will locate and display deleted records the same as any others, which rather defeats the purpose of deleting them. dBase 2.4 defaults to SET DELETED OFF, which acts the same way.

However, with SET DELETED ON, deleted records cannot be found or processed by any command which allows the next phrase, such as LIST, DISPLAY, LOCATE and others.

That leaves just a couple of miscellaneous parameters: SET ESCAPE OFF (it defaults to ON) disables the ability of the ESCAPE key to interrupt executing command files, and therefore stops users breaking in to systems.

Finally, the REPORT command normally performs a page eject before start-

ing to print, probably wasting paper as it does so. SET EJECT OFF will suppress the deforestation behaviour.

More Complex SETS

While we're on the subject of REPORTS, let's start looking at more complex versions of the SET command. SET HEADING TO <string> sets the heading of reports.

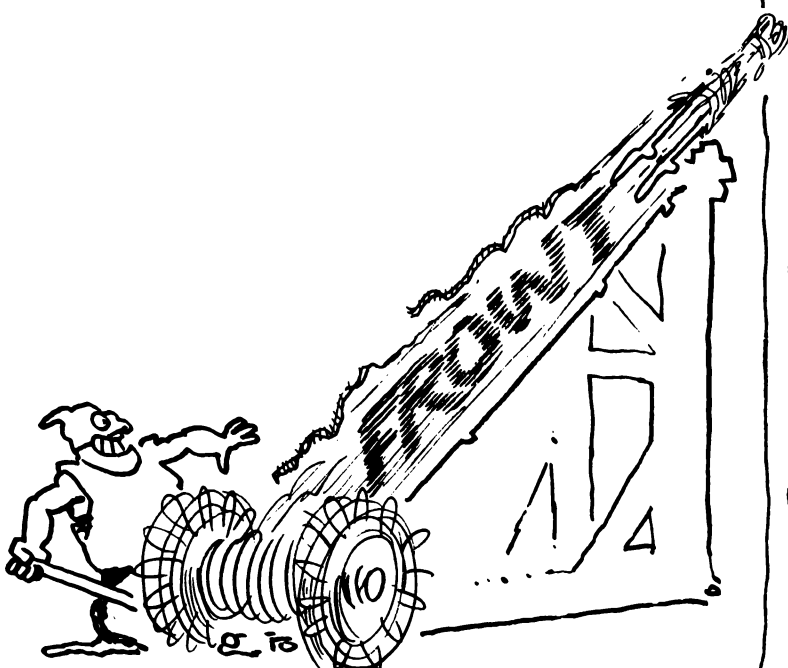
SET FORMAT TO can take one of several options: SCREEN, PRINT or <filename>. dBase makes extensive use of format files, which contain @..SAY..GET commands. Such forms can be sent to either the screen or printer by either of the first two options. The third specifies the format file from which the form will be read.

Normally, dBase creates files on the CP/M default or current drive (usually A:), unless this is over-ridden by explicit drive naming as part of file names. However, if all command and data files for an application are on drive B:, then the default drive can be set to B: by SET DEFAULT TO B:. On early versions of dBase, one had to omit the colon, thus: SET DEFAULT TO B.

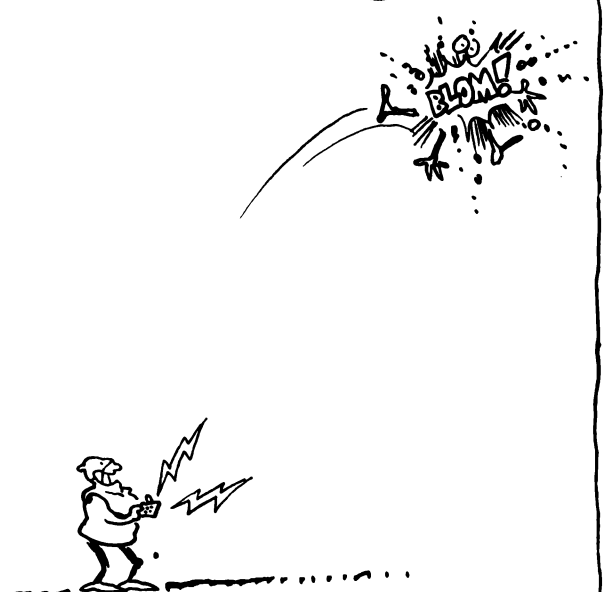
SET DATE TO <datestring> sets the system date, without performing any validation on it, which is the simplest way to get around version 2.3's predisposition for US date format.

Finally, SET INDEX TO <indexfile>, <indexfile>.. is another way of saying USE <datafile> INDEX <indexfile>, <indexfile>.. when you've already said USE <datafile>. It's a bit quicker, that's all.

That concludes our guided tour around the dBase parameters; next month, we'll start programming. ☐



SET BELL OFF



SET COLON OFF

your computer

text file

Unfair to Dick

I HAVE just read the August 1983 issue of *Your Computer* and was pleased to see it was up to its normal high standards of readability for rank beginners like myself.

I was especially pleased to see the article on 'Cash and Carry Computers', as quite obviously that is where the average consumer will spend his money. However, I really don't feel that the article on the Dick Smith Wizzard was fair, as you have obviously treated this unit as purely a games machine. Owners will no doubt be fully aware of its games ability, and most of the games available are of excellent quality; as your writer observed, with the higher level of skill on the games the computer does like to win!

I do feel you could at least have given this unit a quick check-out on its computing abilities, as with the addition of the basic interpreter cartridge the unit becomes quite a powerful little unit and is very easy to use, especially for the creation of graphics, which are very similar to those of the TI 99/4A.

Eventually when all the proposed peripherals are released for this unit it will definitely be a contender for the home. Software is very scarce at present, but magazines such as yours could help by publishing the odd program or two.

I trust you may do a re-review of this great little unit; after all, profits from this computer are kept in Australia to help our economy. Incidentally, as you often complain about lack of information as to what processors these 'cheap' units use, the Wizzard uses a 6502.

Mr P Meehan
Lakemba, NSW

We wrote about the Wizzard as a games machine because they were the only programs the suppliers sent us for review with it. We'll be happy to print programs for the Wizzard (not just games!) in our 'Pocket Programs' section, and invite contributions from Wizzard users just as we do from all home computer users.

One Mistake

I DON'T USUALLY write letters to magazines but the letter from Alan Stephens (Textfile, August 1983 *Your Computer*) spurred me on. I fully endorse his remarks.

I first began subscribing to *Your Computer* for the tutorials and program listings, which were then both regular features.

Programs throughout the magazine are in most cases now printed in microscopic, illegible lettering. 'Pocket Programs', once a regular monthly feature, are now published as a rare and special treat. When they finally appear it is as a liftout, mostly illegible and printed on inferior-quality paper which ensures that commas, semicolons and other fine details are missed.

When discussing this problem with a friend the other day, he agreed and went on to say - "If they handle programs that way, what

price their software and hardware reviews?"

MR S. BARBER
Waramanga, ACT

When we print program listings, as far as possible we use the original sent into us by the author, as to retype them increases the possibility of mistakes too greatly. We do the best we can to photograph the listings up so that they're both legible and not too faint, and often ask authors to print out new listings for us if the first one is too faint, but sometimes the result is still very dicey. So software authors please take note - when you send us a listing, make sure your printer has a new ribbon in it!

As for 'Pocket Programs', it is now scheduled to be published every second month, alternating with *Your Business Computer*. We produce it as a liftout because we understand that most readers find it more convenient that way, and again we do our best to make the listings legible and clear.

I'm sorry if people have suffered frustration because of a mistake they've copied from an unclear listing, but we do check the listings before they're printed to make sure we've done everything possible to avoid that situation happening. But you make one mistake and people never forget!

Out Of The Pot Into The Fire

BEING A BUDDING intrepid 'Adventurer' I decided to try out 'Escape From Rungistan' after reading your article on it.

With the help of several hundred interested fellow students we made it up to the jungle airstrip without too much hassle (although it was only luck that got us past the guard tower).

However, we have been getting cooked in the natives' pot now for quite a long time, and would be very grateful if you could provide us with some kind of hint to help us overcome this perplexing situation.

Our inventory up to now is:

Pilot's licence
Almanac
Bottle of Booze
Catcher's Mitt
Magnifying Glass
Money
Dynamite

We have read both books and know about the graffiti 'Nessen'.

Our theory is that we need the natives' cooking pot to obtain the gas to operate the plane, but at the moment we have no idea of how to rid ourselves of these frustrating natives.

Could you see your way clear to help us?

MIKE BANTICK
79 Lakeside Ave
Mt Beauty 3699

We wouldn't dream of trying to spoil it for you by giving you any hints (that's one way to get out of having to admit that no one here is an 'Escape from Rungistan' whiz) - but if any other readers have any tips, please pass them on to Mike and friends.

Missing Address

ONE READER has written pointing out that JH Crabb, in his March article, (Sinclair Goodies) had omitted supplying an address.

The address in question is:

Lamo-Lem Laboratories,
Box 2382,
La Jolla
CA 92038,
USA.

M M CRABB
Kiama, NSW

Vic Programs Wanted

I'M 12 years old and have a VIC-20. I am rapidly running out of programs. I have swapped with my friends and no one else has any programs.

Thank you for the Function Plotter program for my computer and for the Microbee programs in your magazine; I have a Microbee in my school.

However, the reason I wrote is to ask if you could supply some programs for the VIC-20, or put me onto someone else who writes them. Not the ones in your magazine, but some others, for I get your magazine every month. It would be very much appreciated.

DALE SZANCER
4 Magra Place
Kings Langley, NSW

Macro Text Editors

CAN YOU advise me whether there are any (preferably cheap) text editors around that run on CP/M and that can do macro runs for groups of repeatedly used editing commands?

Can you also advise me of a beginners instruction book on BASIC that is written specifically for MBASIC-80?

T WALKER
Rockhampton, QLD

According to Bill Bolton, our CP/M columnist, the best text editors available with macro runs are:

Wordmaster, distributed by Imagineering, and VEdit, available from Software Source, 344-348 Oxford Street, Bondi Junction 2022.

Bill reckons there isn't a book written specifically for MBASIC for CP/M, so we can't help you there.



TECH

pty. Ltd.

FOR SOFTWARE

CP/M

CP/M-80 Software

Cbasic-II	\$	295.00
CB-80 (C-basic Compiler)	\$	799.00
CIS-Cobol	\$	1135.00
CP/M Plus (CP/M 3)	\$	579.00
CP/NET	\$	339.00
Cardbox	\$	375.00
dBase-II	\$	952.00
Datastar	\$	333.00
Directory Sort	\$	65.00
Display Manager	\$	619.00
Dizilog	\$	249.00
Mallmerge (WS)	\$	333.00
Wordstar	\$	669.00
Vedit	\$	195.00
V-Com	\$	119.00
V-Spool	\$	79.00
Z Sid	\$	139.00

CP/M-86; MS-DOS SOFTWARE

Cbasic-86	\$	509.95
CIS-COBOL-86	\$	1195.00
CP/M-86 (uninstalled)	\$	459.00
CP/M-86 for IBM PC	\$	99.00
Concurrent CP/M-86	\$	549.00
dBASE-II-86	\$	952.00
GSX-Kernel	\$	769.00
M/PM-II	\$	559.00
Pascal MT+	\$	649.00
SPP (for Pascal MT+)	\$	406.00
Pascal MT + & SPP	\$	999.00
Punctuation and Style	\$	213.40
Sid	\$	22.04
Spellbinder (CP/M-80)	\$	579.46
Spell Development Pkg	\$	133.04
Spell C. Itoh Interface	\$	44.64
SuperCalc	\$	347.32
Supersort-I	\$	292.98
Supersort-II	\$	250.88
Spellstar (WS)	\$	333.00
The Word Plus	\$	199.00
GSX-Plot	\$	769.00
GSX-4010	\$	769.00
Pascal MT + 86	\$	909.00
SPP-86	\$	425.00
Pascal MT + 86 SPP	\$	1195.00
Spellbinder (CP/M-86)	\$	695.00
Spellbinder (MS-DOS)	\$	695.00
Spell Development Pkg	\$	149.00
Sid-86	\$	275.00
The Word Plus-86	\$	249.00
Vedit-86	\$	195.00

MICROSOFT

APPLE DOS.

2408 ADIOS muMATH (tm)	\$173.00
ADIOS muMATH/muSIMP	
2409 (tm)	\$340.00
2210 Decathlon	\$53.00
2242 Multi-Tool Budget	\$215.00
Multi-Tool Financial	
2241 Statement	\$154.00
Multiplan Electronic	
2223 Worksheet	\$347.00
2348 Premium Soft Card Ite (euro)	\$575.00
2313 RAMCard (tm) Board	\$157.00
2304 SoftCard (tm) System	\$482.00
2222 The Applesoft(r) Compiler	\$245.00
2202 Typing Tutor II	\$43.00

APPLE CP/M

2306 A.L.D.S (tm)	\$171.00
2307 BASIC Compiler	\$499.00
2311 COBOL Compiler	\$875.00

2305 FORTRAN-80 Compiler	\$278.00
Multiplan Electronic	
2323 Worksheet	\$347.00
2317 Sort Facility	\$277.00
2318 muLISP/muSTAR	\$281.00
2309 muMATH/muSIMP	\$340.00
3207 BASIC Compiler	\$525.00
3214 BASIC Interpreter	\$465.00
3211 COBOL Compiler	\$875.00
3215 EDIT Text Editor	\$188.00
3205 FORTRAN-80 Compiler	\$658.00
3216 Macro Assembler	\$298.00
Multiplan Electronic	
3223 Worksheet	\$347.00
3217 Sort Facility	\$277.00
3218 muLISP/muSTAR	\$281.00
3209 muMATH/muSIMP	\$340.00

MS-DOS 5 INCH

1407 BASIC Compiler	\$525.00
1414 BASIC Interpreter	\$464.00
1445 Business BASIC Compiler	\$807.00
1448 C Compiler	\$658.00
1411 COBOL Compiler	\$875.00
1405 FORTRAN Compiler	\$478.00
MS-DOS Programmers	
Manual	\$95.00
1442 Multi-tool Budget	\$215.00
1441 Statement	\$154.00
Multiplan Electronic	
1423 Worksheet	\$347.00
1420 Pascal Compiler	\$478.00
1417 Sort Facility	\$277.00

IBM PERSONAL COMPUTER COMPATIBLE—PC-DOS

9938 64K SystemCard	\$461.00
0338 256K SystemCard	\$698.00
9813 64K RAMCard Board	\$334.00
0013 64K RAMChips	\$193.00
9930 Flight Simulator	\$75.00
9837 Mouse	\$259.00
1434 Word	\$438.00
1452 Word/Mouse	\$601.00
9918 muLISP/muSTAR	\$350.00
9909 muMATH/muSIMP	\$408.00

MICROBEE

AST	\$22.50
BACKGAMMON	\$17.50
BASIC TUT	\$20.00
BEEZ80	\$20.00
CHOPPER	\$20.00
COMPOSER BEE	\$20.00
DEBUG	\$17.50
DEFENDER	\$22.50
DIGITALK	\$29.00
EMU JOUST	\$17.50
FORTH CAS	\$29.00
FORTH EPROM	\$39.00
FROGGER	\$17.50
KILO/GHOST	\$20.00
KING KONG	\$20.00
LOGO BEE	\$22.50
MACHINE/CODE	\$25.00
METEOR RESC	\$17.50
MONITOR	\$10.00
MUSICB	\$20.00
TAPE DOCTOR	\$17.50
TOUCH TYPE	\$20.00
TRSBEE	\$30.00
WORDPROC CAS	\$35.00
WORDPROC CHIP	\$39.00

COMMODORE

COMMODORE 64 RECREATION SERIES ON DISK:

124625 ZORK 1	\$25.00
124626 ZORK 2	\$25.00
124627 ZORK 3	\$25.00
124724 GAMES 1	\$25.00
124725 GAMES 2	\$25.00
124726 GAMES 3	\$30.00

COMMODORE 64 RECREATION SERIES ON CASSETTE

120300 PIRATES & SNOWMAN	\$12.00
120301 DEPTH CHARGE	\$12.00
120302 STELLAR WARS	\$12.00
120303 SOOPER FROOT	\$12.00
120304 LABYRINTH	\$12.00

COMMODORE 64 GAME CARTRIDGES:

120601 SUPER LANDER	\$29.95
120602 KICKMAN	\$29.95
120603 SEAWOLF	\$29.95
120604 SPEED/BINGO MATH	\$29.95
120605 RADAR RAT RACE	\$29.95
120606 CLOWNS	\$29.95
120609 VISIBLE SOLAR SYSTEM	\$29.95
120610 TOOTH INVADERS	\$29.95
120611 FORTY FATHOMS	\$29.95
120612 BLUEPRINT	\$29.95
120613 LAZARIAN	\$29.95
120614 OMEGA RACE	\$29.95
120613 WIZARD OF WOR	\$29.95
120616 LE MANS	\$29.95
120617 PINBALL	\$29.95
SPECTACULAR	\$29.95
GOLF	\$29.95
120619 SOLAR FOX	\$29.95
120620 SATAN'S HOLLOW	\$29.95
120621 AVENGER	\$29.95
120622 SUPERSMASH	\$29.95
120623 STAR POST	\$29.95
120624 FROG MASTER	\$29.95
120631 STAR RANGER	\$29.95
120632 DRAGONS DEN	\$29.95

COMMODORE 64 PROGRAMMING SERIES:

120101 ASSEMBLER 64	\$60.00
120102 LOGO	\$100.00
120103 PILOT	\$60.00
120106 SIMON'S BASIC	\$80.00
120107 PROGRAMMERS' UTILITIES	\$28.00
120080 CP/M SYSTEM (INCLUDES Z80)	\$80.00

COMMODORE 64 EDUCATION SERIES:

120150 GORTEK & THE MICROCHIPS	\$50.00
120151 INTRO. TO BASIC PART 1 & 2	\$40.00
120152 INTRO. TO BASIC PART 2	\$40.00

COMMODORE 64 ART & MUSIC SERIES:

120402 MUSIC MACHINE	\$40.00
120403 MUSIC COMPOSER	\$40.00

COMMODORE 64 BUSINESS SOFTWARE:

120200 EASY SCRIPT	\$100.00
120201 EASY SPELL	\$80.00
124204 EASY MAIL	\$80.00
124200 EASY CALC	\$100.00
124210 WORD/NAME MACHINE	\$80.00
124700 BUSINESS 1	\$25.00

COMMODORE 64 PUBLIC DOMAIN (DISK):

124701 GEOGRAPHY 1	\$25.00
124717 COMPUTER SCIENCE 1	\$25.00
124722 TECHNOLOGY 1	\$25.00

SINCLAIR SPECTRUM

SOFTWARE (MODEL)

Biorhythms	22.50	16/48K
Space Raider	19.50	16/48K
Chess	25.00	48K
Planetoids	19.50	16/48K
Flight Simulation	25.00	48K
Backgammon	19.50	16/48K
Vu-file	27.50	48K
Vu-calc Spreadsheet	25.00	16/48K
Vu-3D Graphics	25.00	48K
Adventure A	22.50	16/48K
Planet of Death		
Adventure B, Inca Curse	22.50	48K
Adventure C	22.50	48K
Ship of Doom		
Adventure D	22.50	48K
Espionage Island		
Reversi	25.00	16/48K
Collectors Pack	22.50	48K
Club Record Controller	22.50	48K
Embassy Assault	19.50	16/48K
Cyrus-is-Chess	27.70	16/48K
ZX Forth Language	44.00	48K
Small Business Accts	39.00	48K
Hungry Horace	19.50	16/48K
Horace Goes Skiing	19.50	16/48K
Horace & the Spiders	19.50	16/48K
The Hobbit	44.00	48K
Flippit	27.70	16/48K
Chequered Flag	22.50	48K
Cattell IQ Test	38.10	48K
History 1	22.50	16/48K
Inventions	22.50	16/48K
Music 1	22.50	16/48K
English Literature	22.50	16/48K
Zeus Assembler	38.10	48K
Monitor/Disassembler	38.10	16/48K

All Software subject to availability at time of order

Mail Orders Accepted
Bankcard or Cheque

Prices subject to change without notice

The following are registered trade marks:
CP/M-80: Digital Research Inc.
CP/M-86: Digital Research Inc.
MS-DOS: Microsoft
PC-DOS: International Business Machines
IBM: International Business Machines
Microbee: Applied Technology

Monitors — Amber Or Green?

We've only really started seeing amber monitors recently in Australia, although in the UK and Europe they've been popular for some time. Jane Mackenzie looked at two monitors from Amdek that make the choice between green and amber easy — there's one of each.



ALTHOUGH terminal and monitor screens are almost traditionally green on black for technical reasons, it's often been criticised as a colour combination that leads to eyestrain and related discomforts, particularly if someone is using the monitor for a long time. Various other colour combinations have been tried — including white on black and dark blue on light blue — but the only other colour that's gained acceptance is the so-called 'amber' screen.

This 'amber' is in fact usually a shade of yellow on a shade of brown, and one scientific reason given for its success is that yellow is the only colour that doesn't produce an image of its complementary colour on the retina. This apparently makes looking at yellow less taxing on the eyes, and so results in fewer complaints of eyestrain amongst operators.

Whatever the technical reasons behind the amber screen's growing popularity, most people judge the performance of a monitor from a subjective viewpoint — and I for one found an amber screen preferable to the green. I have an amber Kaga monitor attached to my Apple at home, and am subjectively convinced that this colour combination is 'softer' on the eyes than the old green-on-black.

Stylish Monitors

The result of my preference for amber was that, when Roland Corporation asked *Your Computer* to take a look at a new amber Amdek monitor the company is distributing in Australia, I was keen to see the standard of amber monitors starting to appear in this country.

The Amdek 300A is an elegant monitor, housed in a lightweight, industrial-grade beige cabinet. The screen surround is dark brown, which not only tones nicely with the beige, but also blends in well with the brown screen background and so avoids distracting the eye with extra colours. On the front of the cabinet are two controls: a combined pull/twist knob for power-on and brightness, and a contrast knob. All the other controls are neatly hidden away at the back of the cabinet.

Included in these controls are a vertical and a horizontal hold — although the monitor was perfectly adjusted when I plugged it into my Apple — and VLINE and VSIZE. These two controls alter, respectively, the vertical shape of the image and the vertical size of the screen. This is an extremely good idea, allowing the monitor to be adjusted to the screen image produced by any computer (although again it needed no adjustment for the Apple).

Rather than knobs which could be easily knocked, these two controls are Philips-head screws recessed into the

cabinet and attached directly to the pc board. Unfortunately, the recessing was so deep that I found it extremely difficult to adjust these screws, and impossible to see the screen whilst doing so. Perhaps something could be done to make the operation of a basically good design idea into a more ergonomically viable process.

The greatest asset of the Amdek 300A is its rock-steady image – not a flicker or a shimmer to be seen. The actual resolution of the characters is no better than on comparable monitors, but the steadiness with which they're displayed makes this unit particularly easy on the eyes.

This factor is accentuated by the non-glare screen; it feels like finely textured glass, and is highly effective in cutting down reflections. I was operating the monitor in artificial light with the light source directly behind me, and could see no reflections whatsoever.

The colour of the characters is a dark yellow, probably close to most people's conception of 'amber', and the background is a very dark brown. Both these characteristics are of course adjustable by using the contrast and brightness controls, but I found I needed both knobs turned all the way up to the lightest end of the range to get an accept-

able image. This may be different in other lighting situations.

Green For The Traditionalists

The Amdek 300A has a sister monitor, the 300, for the traditionalists who still prefer the green-on-black colour combination. Its characteristics and controls are identical to those of the 300A, except that it has a green power-on light instead of the 300A's amber one!

The green of the characters is a very emerald green which could, I feel, be quite harsh on the eyes. However, the

background also has a green tinge, which means the contrast between image and background is not as stark as it might otherwise be.

The Amdek monitors are claimed to be compatible with practically every microcomputer or word processor, and they come with a full one-year warranty covering both parts and labour. At \$325 rrp they're not the cheapest monitors on the market, but they certainly have the quality needed for prolonged use or to save the eyesight of late-night computer freaks. □

Specifications

CRT:	30 cm (12 inch) diagonal, 90° angle
CRT phosphor:	P-31
Signal:	Composite video in
Scan frequencies:	Horizontal: 15.75 kHz
	Vertical: 50/60 Hz
Display size:	210(W) by 158(H) mm
Video response:	18 MHz (+/- 3 dB)
Resolution:	Centre: 900 lines
	Corners: 800 lines
Input impedance:	75 ohm
Semiconductors:	16 transistors, 20 diodes
Power source (Australia):	AC 240 V/50 Hz
Power consumption:	28 W
Weight:	7.7 kg net (17 lb)
Dimensions:	289(H) by 368(W) by 341(D) mm

NSA/COPAL WP1000

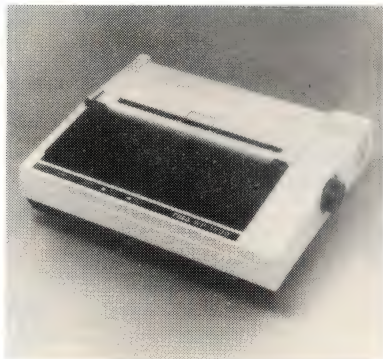
Perfect Business printers for IBM and other micros.

FEATURES:

- 80 COLUMN 9 WIRES DOT MATRIX IMPACT PRINTER
- 10 CPI — 100 CPS BI-DIRECTIONAL, LOGIC SEEKING
- CENTRONICS PARALLEL AND RS232C SERIAL PORT STANDARD
- SUPER PRINT QUALITY
- GRAPHICS. PROPORTIONAL PITCH. CONDENSED. DOUBLE WIDTH MODE
- FANFOLD PAPER. ROLL PAPER AND CUT PAPER
- PAPER BACK FEEDING
- DETACHABLE/ATTACHABLE HEAD WITHOUT TOOL
- ADJUSTABLE PIN FEED TRACTORS
- MULTI STRIKE RIBBON CARTRIDGE

ALSO AVAILABLE:

- Hitachi 8" double sided, double density, slim line floppy disk drive FDD-412 (1,440KB)
- Hitachi 5" double sided, double density floppy disk drive HFD505B (500KB), HFD516B (1.6MB)
- Hitachi 3" compact floppy disk drive, single sided, double density, HFD305S (250KB)
- Hitachi colour monitor for IBM PC



NISSEI SANGYO CO. LTD. (Inc. in Japan)
200 Pacific Highway, Crows Nest, NSW
PO Box 954, Crows Nest NSW 2065
Phone: (02) 923-1522, Telex: AA70941,
Facsimile: (02) 922-2498

**NSA
COMPUTERS**

SOFTWARE RENTAL

NOW YOU CAN RENT THE MOST
POPULAR GAMES —
EDUCATIONAL — BUSINESS
SOFTWARE FROM:



- At only 20%-25% of the
current retail price
+ Postage & Packing
- All software in original manufacturers packaging.
 - No minimum quantity.
 - Rentals are for 7 days (plus 3 days grace for return shipping).
- We will endeavour to obtain any software requested.

To immediately order, or for more
information ring:

**S. D. COMPUTER
RESEARCH**
(02) 328-6293

WANTED



SOFTWARE AUTHORS! for the MicroBee Computer

MYTEK Computing is looking for new authors to join its international team of programmers for the MicroBee. If you have a product for the MicroBee market, let us show you the advantages of working with our team of design, production and distribution specialists.

Call or write, or send us a machine readable copy of your work for prompt review under strictest confidence.

MYTEK Computing is the world's leading independent producer of software for the MicroBee.



1 Kent Street, Bicton, 6157, W.A. Telephone: 330 7336

BYTEWRITER

DAISY WHEEL PRINTER LETTER QUALITY PRINTER AND TYPEWRITER IN ONE PACKAGE

The BYTEWRITER is a new Olivetti Praxis 35 electronic typewriter with a micro-processor controlled driver added internally.

\$799

plus shipping
\$20
Dealer
Inquires
Invited



FEATURES

- Underlining • 10, 12, or 15 characters per inch switch selectable • 2nd keyboard with foreign grammar symbols switch selectable • Changeable type daisy wheel • Centronics-compatible parallel input operates with TRS-80, Apple, Osborne, IBM and others • Cartridge ribbon • Typewriter operation with nothing to disconnect • Service from any Olivetti dealer
- Self test program built in.

BYTEWRITER

CONTACT: COMPUTER EDGE PTY. LTD.,
364 FERRARS STREET, ALBERT PARK 3206

Showroom:
229 Chapel Street, Prahran Vic. 3181
Phone (03) 529 7622

TANDY ELECTRONICS DEALER

**Home Computers
Model 100
Model 4
Model 2 etc**
at affordable prices

*Not only the best but the
very best service*

*90 day Warranty.
Bankcard & cheque
orders accepted.*

Bayne & Trembath
3 Boneo Rd., Rosebud, Victoria 3940.
Ph: (059) 86-8288, A/H (059) 85-4947

TRS-80 Model 4 CPM



CPM OPERATING SYSTEM INCLUDES...

- Disk Interchange Format ability to copy 20 other manufacturers' disk formats.
- Memlink uses extra memory as a solid state disk drive.
- Emulates ADM3A Terminal.
- Full Australian Integrated Accounting Software available separately for \$600.
- Supplied with all Digital Research utilities.
- Makes the Model 4 able to run all CPM Industry standard software.

ONLY \$250

deForest Computers
26 STATION ST., NUNAWADING, VICTORIA 3131.
TELEPHONE (03) 877 6946 • TELEX AA 30625

As simple as **AGC**

AGC Model 123AS Monitor

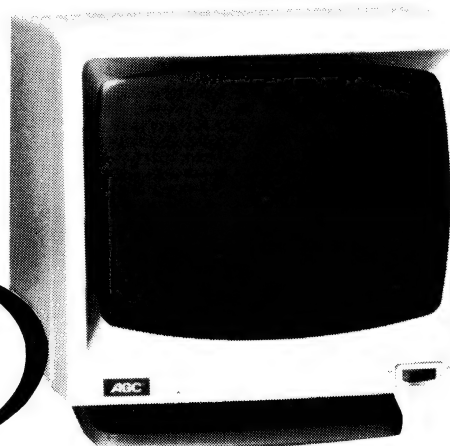
Don't spoil your computer's performance with a cheap converted TV set. This monitor has been **designed** for computers and their owners.

- Amber screen for minimum fatigue
- Non reflective etched screen – no glare
- Wide bandwidth 10 Hz - 22 MHz
- 1000 line resolution for crisp, clear information
- 900 line resolutions at edges
- Swivel stand as option
- Dealer enquiries invited

INTRODUCTORY OFFER!

Swivel Base – No Additional Cost

\$255



normally \$270 Offer ends 29th February 1984

AGC Model 2001 Computer

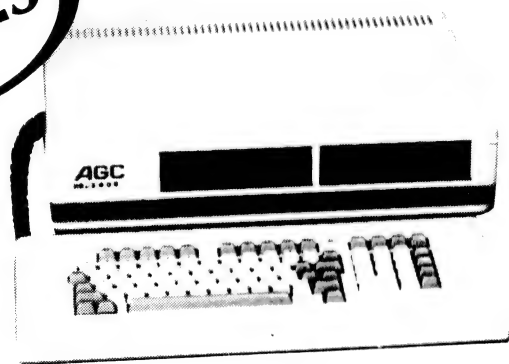
- | | |
|--------------------------|----------------------------|
| • 64 K RAM | • Amber monitor (as above) |
| • Integral keyboard | • Numeric keypad |
| • Dual micros Z80 + 6502 | • Upper and lower case |
| • Single disk drive | • Joystick inputs |

This must be the lowest priced CP/M Computer on the Australian Market!

All this for only

\$1,295

\$1,425



The Superb AGC Model 3001 Computer

All the features of the AGC Model 2001

PLUS

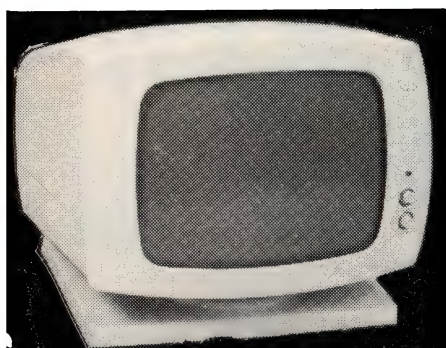
- Separate keyboard
- 10 programmable function keys – strings up to 48 words
- Auto repeat

Both these computers will run Apple software.

Call today (02) 816 2211

396 Victoria Road, Gladesville, N.S.W. 2111
GENERAL ELECTRONIC DEVELOPMENTS (SALES) PTY. LTD.

your computer text file



**NEW AMBER
12" MONITOR
HI-RES II**
**COMPLETE WITH
ADJUSTABLE STAND**

**SPECIAL UNTIL
FEB. 28th**
\$199 COMPLETE

FREIGHT: EXTRA \$12
ANYWHERE IN AUSTRALIA

**12 month full
warranty!**

*Compatible any
brand computer!*

**Video
Technology**

TELEPHONE ORDERING
Receive faster service.
Phone your order NOW. (02)568-3423

P.O. BOX 217, Petersham 2049
LEVEL ONE, 604 PARRAMATTA RD.
PETERSHAM, N.S.W.

All prices include sales tax.
Monitor will work with any
brand computer.

Video Technology P.O. Box 217, Petersham 2049
FOR FREE CATALOG — many bargains,
send S.A.E. Fast del. No C.O.D. Personal cheques OK.
Please charge my Bankcard. Expiry date

4 9 6 - - - - -

Name

Address

Postcode

Signature

That Revolting Bee

AS A PROUD owner (of a Bee, of course) of two years' duration, I have been shocked by recent developments in the aesthetics of the Microbee. I liked the new case, but now ... NOW they have that yucky, urky-purky THING. That hideous epitome of the Crass twentieth century. I hate it! I hate it! Bleach! Heave!

I'm talking about that REVOLTING stylised Bee that is their new symbol. I propose immediate stop-work meetings for every union around the world to discuss the matter. Or at least a petition. I will be only too glad to co-ordinate any such action and any names and addresses can be sent to me (via the underground radio network). Together we can smash this evil uprising. Brothers (and sisters) unite! Bring back the old Bee!

DAVID PARRY
Yeronga, QLD

Backyard Dealers

I WOULD like to alert your readers to the existence of 'backyard' computer dealers, and to one in particular.

This company has advertised in recent issues of your magazine and has addresses in both Sydney and Melbourne — my problem being with the branch in Sydney. The advertisements were for two types of printers as well as programs for the Microbee.

I placed an order for a DP 510 printer; and on receipt it was discovered that the dustcover was broken, presumably in transit, and a significant amount of dust was inside the printer. The company was immediately notified by telephone, and they said a replacement printer would be despatched by overnight freight.

When the replacement had not arrived after two days, the company was again contacted, and they said they had to obtain a serial module to suit, but that this had arrived and the printer had been sent the previous day.

Once again no delivery resulted. The company then stated that the printer had not been sent, that they would not be sending a replacement printer, only the top cover. After some argument, it was agreed I would try out the printer and if I found it fully operational I would accept it, as they advised it carried a 90 day warranty. They agreed to send a new top cover immediately.

This had not arrived after one week. A letter was sent to the company stating, if the cover was not received within seven days, or I had received no written advice regarding the situation, further action would be taken against them. A clarification of the exact situation with the warranty was also requested, as further information indicated they would only honour it for 14 days after purchase.

No further contact has been received; action has been taken accordingly.!

My suggestion to anyone purchasing items of any value is as follows:

(a) Deal with the larger, established organisations if possible, unless a thorough check can be made. You may save a few dollars with a 'backyarder' but it's not worth it in the long run.

(b) Try to obtain a written quote including the warranty situation. If the company is genuine, they will be happy to provide this.

(c) Ensure adequate insurance is arranged when sending items by any of the commercial transport organisations. If loss or damage occurs it's too late to find out if there was automatic insurance or not.

If anyone would like to know the name of this 'backyarder', they can phone me on (050) 23 3626.

DAMIEN VALE
Mildura, VIC

Date Formats

IN THE PAST few months there has been considerable debate in your pages regarding date formats, in particular the contention between the North American standard of MM/DD/YY and the European/Australian standard of DD/MM/YY.

While each format has advantages and disadvantages, critics and supporters, the time may now be ripe to introduce a third standard which appears to be supported mainly by the Japanese.

The format is (surprise! surprise!) YY/MM/DD, and its major advantage is that a date field encoded in this format can be used as a single sort key: for example, Y/M/D from 01/01/01 to 99/12/31, whereas the other popular formats require at least two keys.

Thanks for the continuing excellence of your magazine, and this opportunity to further confuse the issue!

GARY WOODMAN
Darwin, NT

dBase Missing

I AM WRITING to let you know that I bought the September issue of 'Your Computer' only to have the third part of your series on dBASEII and, as you know, the promised (August publication) third part was not included.

When I do my shopping, I do not have time to look through any magazine to check what is in it before I make the purchase so, as you can imagine, I was more than a little annoyed to find that the article I wanted was missing!

JUDY MIKKELSEN
Weetangera, ACT

We're sorry you were inconvenienced; we try to publish parts of series in consecutive issues, but occasionally pressures of time or space prevent us from doing this. The fifth part of 'Getting dBase from dBase' is on page 80 of this issue.

Test fired by millions at the arcades. Now take them home.

Wico™ Trackball

The ultimate in arcade precision with built-in micro-processor that gives you 300° tracking accuracy. Two buttons for awesome firepower. Extra long 1.5 metre cord.

Wico™ Bat-Handle Joystick

Six leaf-type moulded switches for incredible accuracy and sensitivity. Choice of two fire buttons. Extra long bat handle grip and generous 1.5 metre cord.

Wico™ Red Ball Joystick

The famous red ball grip that gives you authentic arcade precision and firepower. Two fire buttons and extra long 1.5 metre cord.



Coming Soon

Wico Three-Way Joystick DeLuxe.

Three interchangeable handles with arcade action in each.

Wico Adaptor for Apple* II – turns your Apple* II home computer into a real arcade game centre.

The satisfaction of perfect control and deadly accuracy, the confidence of fire power that rests on a hair trigger. You get it all at the arcades because Wico have engineered it into the controls of thousands of arcade video games. And now you can get it at home with the Wico Command Control Range – the authentic arcade controls designed for your personal games machine with a full 12 months limited warranty.

Wico arcade controls are compatible with Atari® 2600™, Atari home computers, Commodore** Vic 20 and, with an adaptor (sold separately), the Apple* II home computer.

WICO™ COMMAND CONTROLS

Arcade accuracy, precision and control at home.

Send me the facts on the Wico™ COMMAND CONTROL range now.

Name _____

Address _____

Postcode _____

Phone _____

I own a _____ video game/computer.

Mail to Futuretronics® Australia Pty. Ltd., 1076 Centre Road, South Oakleigh, Vic. 3167.



CONCORD/8555YC

REVEL

Here's the one the others



Hottest selling new home computer in UK and Europe - over 30,000 per month - and recently named Home Computer of The Year in France!

ORIC-1 plugs directly into the aerial socket of your TV.

It also has an RGB outlet if you require colour monitor quality. Text and graphic displays are ultra-bright, giving 40 characters of 28 rows. 8 foreground and 8 background colours can be displayed at any one time.

HIGH RESOLUTION GRAPHICS With Oric you have the choice of full Alpha Numeric computer standard character set, or TELETEX (CEEFAQ/ ORACLE) Alpha Mosiac graphics. The ORIC has, of course, Teletext/Viewdata compatible displays, plus the added bonus of being able to create up to 96 characters of your choice. Add to these features both flashing and Double Height characters and you can start to appreciate the full capability of ORIC-1.

SOUND The ORIC contains a high quality loud-speaker and a dedicated sound synthesiser circuit producing 6 full octaves of controllable sound.

For beginners, 4 programmed sound effects - SHOOT - EXPLODE - PING - ZAP - are available for games, simulations, etc.

You can even programme your own sounds using "SOUND, MUSIC and PLAY" commands, giving the user full control over the dynamics of the sound.



The Oric-1 comes with the 167 page Oric Programming Manual and special demonstration cassette.

Today, you have the choice of more home computers than you can poke a stick at. And, it's fair to say that they all claim to be "the best" - to such an extent that you can't help wondering, "WHAT EVER HAPPENED TO TRADE PRACTICES?" Well, this is all about a computer for the first-time buyer that the others would rather you didn't know about. The Oric-1.

What you pay and what you get.

They'd rather you didn't know that the Oric-1 has up to 64K, yet costs from just \$299. It would drive them round the bend if they knew that you knew that the \$299 also bought you six true colours in addition to black and white. They'd be frothing at the mouth if you also knew that MICROSOFT® EXTENDED BASIC is part of the price, together with sound that's loud and clear (not just a muddy "bleep"). And they'd be on a guaranteed, one-way trip to the loony bin if they knew you knew the Oric-1 is backed by heaps of software and a 90-Day Warranty which is extendable to 12 months if you wish. There's more . . .

ALL THESE KEY FEATURES:

• MORE MEMORY AVAILABLE	✓
• EXTENDED MICROSOFT® BASIC	✓
• EXTENDED GRAPHICS	✓
• PROGRAMMABLE MUSIC AND SOUND	✓
• BUILT-IN SPEAKER	✓
• USES STANDARD CASSETTE PLAYER	✓
• LOADS AND SAVES 8 TIMES FASTER	✓
• 40 X 28 SCREEN SIZE	✓
• HIGH-RESOLUTION GRAPHICS	✓
• TV RF OUTLET	✓
• RGB VIDEO OUTPUT	✓
• PARALLEL PRINTER PORT	✓
• COLOUR PRINTER/PLOTTER AVAILABLE	✓
• SUPPORTS LETTER QUALITY DAISY WHEEL PRINTER	✓
• COMMUNICATIONS	✓
• TACTILE HIGH QUALITY KEYBOARD	✓
• AUTO-REPEAT ON EVERY KEY	✓
• FULL CURSOR CONTROL	✓
• SUPPORTS ORIC 3" MICRODRIVES	✓
• UP TO 1.6 MB OF STORAGE AVAILABLE	✓
• WIDE RANGE OF SOFTWARE AVAILABLE	✓
• INTERNATIONAL USERS' MAGAZINE	✓
• 90-DAY OR 12-MONTH WARRANTY	✓

Ask for details of the new Disk Drives, Printers and Communications Modems.

ATIONS

would rather you didn't know about!

The Oric Pedigree

ORIC-1 is superbly designed and engineered. Designed by a leading British team, the computing power of this micro is second to none in its class and offers superb value-for-money. Oric is a major development in MicroComputer design and engineering, with a pedigree that means quality and reliability.

A National Service Network - every capital city - real back-up for you!

Warranty

Oric's National Service Network in five capital cities backs you up. Backed to send new state-of-the-art Oric with a warranty. Additionally you can extend to a full 12 months contract for only \$22.50.

90-Day Warranty

Should anything go wrong with your Oric then a National Service Network in five capitals gets it back to you quick. No need to send interstate for repairs like you have to with most others. Additionally you can extend to a full 12 months contract for only \$22.50.



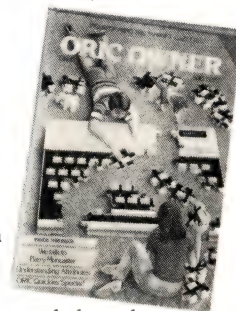
Software Galore!

The Oric's incredible sales success in the U.K. and Europe resulted in a rush of activity by software designers. There is a big selection of programmes available and many more coming - covering a wide range of interests, including arcade, strategy, adventure and simulation games, education, programming aids, graphics, data base, word processing, financial spreadsheet and computer-aided design. Write for our free software listing - or see your Oric Dealer.



Special User Magazine

Once you're a proud Oric Owner, you'll want to receive this well-illustrated two-monthly magazine, showing how to get the best results and more satisfaction from your Oric, packed with information on new software and demonstrating programming techniques with examples. You'll also benefit from helpful comments made by other Oric owners.



NOW ASK YOURSELF THIS ...?

- Can I buy better computer value?
- Who else offers so much usable memory at the price?
- Who else has so many features built in as standard?
- What other computer has such a marvellous range of programmes to help you get the most enjoyment and challenge from your system?

Make the ORIC-1 your family's computer and learn about the future now.

The Oric is the computer of tomorrow — here for you today!

ORIC-1

SEE YOUR AUTHORISED ORIC DEALER TODAY

NEW SOUTH WALES

CITY

Computer Spot,
Shop C4, MLC Centre,
Martin Place.
Tel: 235-2971

BONDI JUNCTION

Computer Spot,
Shop 35,
Eastgate Shopping Centre.
Tel: 387-5208

CORRIMAL

The Shop 4
Home Computers,
Shop 4,
Waters Walkway.
Tel: 83-3952

GRANVILLE

Desktop Computer Systems,
10 Cowper Street,
Tel: 637-3062

HAMMONDVILLE

Wisby Computers,
50 Walder Road.
Tel: 611-1392

KINGSFORD

Micro Vision,
Suite 1,
472 Anzac Parade.
Tel: 662-4063

GOSFORD

Tomorrow's Electronics,
68 William Street.
Tel: (043) 24-7246

HUNTER VALLEY

Hunter Valley Business
Machines,
133 Beaumont Road,
Hamilton.
Tel: (049) 69-3611

TAMWORTH

Plus One Office Systems,
366 Peel Street.
Tel: (067) 66-6211

TAREE

ODS Office Data Systems,
100 Victoria Street.
Tel: (065) 52-3790

VICTORIA

ALTONA

Westgate TV,
101 Pier Road.
Tel: 398-1574

BORONIA

Ray Cross Electronics,
151 Boronia Road.
Tel: 762-2422

FRANKSTON

Computers 2000,
14 Young Street.
Tel: 781-4244

GLEN WAVERLEY

Computer Deli,
102 Kingsway.
Tel: 561-7511

GREENSBOROUGH

Greensborough Computers,
81 Grimshaw Street.
Tel: 434-6166

GREYTHORN

Ultrapase Computers,
264a Doncaster Road.
Tel: 857-4233

HAWTHORN

Calcutronics Pty. Ltd.
797 Glenferrie Road.
Tel: 818-6631

Micro Country,
332 Burwood Road.
Tel: 818-7152

MONT ALBERT

Panatronics
691 Whitehorse Road.
Tel: 890-0579

RICHMOND

High Technology,
87 Swan Street.
Tel: 429-1966

SOUTH YARRA

Gametronics,
Shop 6,
177 Toorak Road.
Tel: 241-3031

BALLARAT

Computer Biz Pty. Ltd.
30 Armstrong Street.
Tel: (053) 32-4243

EAGLEHAWK

Transcom Communications,
7 High Street,
Tel: (054) 46-2422

QUEENSLAND

CAMP HILL

Computer City,
82 Bennetts Road.
Tel: 398-6759

STONES CORNER

C. W. Electronics,
416 Logan Road.
Tel: 39-7088

CAIRNS

Electronic World,
Shop 124,
West Coast Plaza,
Mulgrave Road.

IPSWICH

South Queensland Systems,
2 Ellenborough Street.
Tel: 281-12066

SOUTH AUSTRALIA

CITY

Truscott's,
69 Franklin Street.
Tel: 211-8045

HAMPSTEAD GARDENS

P. C. World,
19 Ways Road.
Tel: 261-0010

MOONTA

ABS Computers,
21 Ellen Street.
Tel: (088) 25-2432

MOUNT GAMBIER

The Computer Place,
4 Anthony Street.
Tel: (087) 25-8344

WESTERN AUSTRALIA

PERTH

Gerald's Electrics,
179 Murray Street.
Tel: 325-6477

your VIC 20/C64 computer

By Andrew Farrell

FIRST OF ALL a big welcome to all those new Commodore 64 and Vic 20 owners out there, thumbing their way through the User guide and cursing the speed of cassette loading. Hopefully you will have several years of trouble free operation ahead.

Zork...now at \$25!

Several months back I mentioned the release of the Zork series and recently received Zork II and III for review. Just to refresh your memory, Zork is one of the most popular disk-based test adventures around on several other computers (whose names shall remain unspoken... Apple TRS-80, CP/M systems and so on).

The game is built around the belief that computers graphics can never replace the human imagination, inspired by descriptions so vivid, at times you almost forget it's just a game.

Zork also implements Infocom's unique Interlogic languages, which allow the player to communicate with the game in a far more English manner than most other adventures.

With a vocabulary of around 600 words and the ability to decipher the meaning of complex sentences, make assumptions on missing words or point out the exact reason for errors, Zork is a pleasure to play.

Set in a vast empire, riddled with strange mysteries, treasures and creatures, it's possible to spend several weeks on the entire series. (Maybe even several months!)

Zork II and III extend the original world and add various other characters such as the Wizzard of Frobozz, who may be spoken to and in some instances directed to carry out simple tasks.

Features such as frame saving, commands to control the length of descriptions, (Brief, Verbose and Superbrief), special abbreviations and score are standard on all three Infocom adventures.

So far I have spent many a wet weekend playing Zork (not to mention several sunny ones), and can recommend it to anyone who enjoys a challenging adventure with plenty to explore.

All three adventures retail for \$25 each on disk (sorry, not on cassette) and are available from most dealers across Australia. My review copy came

from Commodore Business Machines.

Extended Background Mode

The 64 has several modes of operation, including Hi-Res, Multicolour and Text. However, one that everyone seems to be unaware of is the Extended Background mode.

This mode allows four different background colours instead of the usual one. To use this mode, type:

POKE 53265, (Peek (53265) or 2 ↑ 6)

To get back to normal text operation, type:

POKE 53265, Peek (53265) and (255- (2 ↑ 6)).

Four registers contain the background colours for the EBM. These are:

POKE 53281,x - colour 0

POKE 53282,x - colour 1

POKE 53283,x - colour 2

POKE 53284,x - colour 3

x may be any number in the range 0-15, in the same way as colour memory.

The character set is now divided into four blocks of 64, each one being in the corresponding background colour of its register.

If, for example, register zero contained red, register one contained green, register two contained orange and register three contained blue, then the letter 'A' would appear red if printed.

However, if the letter 'A' was shifted, it would appear as a normal 'A' on a green background. A reverse 'A' would appear on background 2, and a shifted reverse 'A' would appear on background colour 3.

As you can see, this will limit the number of characters displayable to 64, but gives a lot more colour.

Hover Bovver

Jeff Minter has been at it again, only this time he has come up with a very interesting game which I think he can claim is almost entirely original.

Hover Bovver is a great combination of sound, graphics and, wait for it ... mowing the grass! No, that wasn't a print error, your mission is not to blast everything to bits, but to mow as many backyards as possible.

You will of course be harassed by your next-door neighbour from whom you borrowed the mower without asking. Luckily you have three neighbours, so if the first is quick to grab his mower back, you can always try the next.

Neighbours can easily be repelled by

your pet dog, but you can't rely on him forever, as any dog has only so much loyalty. The gardener will also be happy to grab that mower if you happen to venture into the flower patch.

Thank goodness for the hedges which you can hide behind. There are plenty of levels (gardens) and watch that dog's tolerance - he doesn't like mowers much.

Great music (English Country Garden) and colourful graphics also help to make this game potentially addictive. Don't be fooled by first impressions; play it for a while before making a decision.

Hover Bovver is available from most dealers on cassette for \$29.95. My review copy came from Progressive Software and is well played at our house.

'Kongo Kong' is now available for the 64, complete with nine levels of difficulty and the full four screens of its famous ancestor, Donkey Kong.

The game incorporates some well-designed graphics and sound, with the usual array of conveyor belts, rolling barrels and other nasties. It is very good value at \$24.95 on cassette, from Ozi Soft. (Also, watch for Cops and Robbers for the 64, based on the original VIC-20 game of the same name, now a complex real-time adventure.)

Pal 64

Everyone would love to own a full assembler editor that is easy to use, compact, well documented and still as comprehensive as you could ever want. Well, Pal just about fits that description perfectly.

PAL stands for Personal Assembly Language and allows a machine code program to be easily entered, edited and assembled. The same file format is used as for BASIC programs, making the transition to Assembly language programming easy.

Pal sits in just over 4096 bytes of memory and may be run with Power 64 (more on that in just a moment) for a total of 8K.

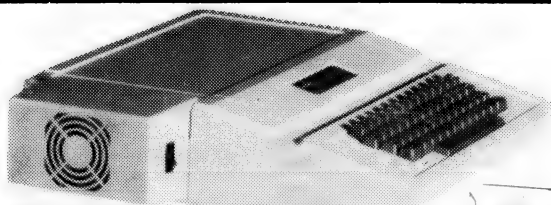
Special opcodes allow a program to be written which includes BASIC and machine code as one file and may then be assembled and run.

After several hours use I was highly impressed with Pal and I now use it for ►

DIRECT IMPORTS

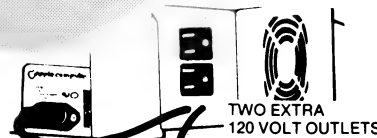
SUPER FAN II FOR YOUR APPLE II* COMPUTER "COOL IT"

- Also fits on Apple's new monitor stand
- Red pilot light on off system switch
- Clips on — no holes or screws
- Replaceable switch.
- Available in 120 V or 240 V and 50/60 Hz
- Durable motor.
- Reduces heat caused by extra plug-in cards
- Sold worldwide • Unique 1 year warranty • Tan or black colour
- Quietest fan on the market
- Increased reliability — saves down time and repair charges
- Low noise due to drawing effect of air through your computer and special fan and motor design
- Two extra 120 V outlets for monitor and accessories turn on when you turn on your fan (not available on 240 V model)



\$59.00

(\$69.00 INCL. TAX)

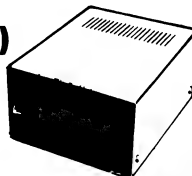


OR ADD A PRINTER! TO YOUR SYSTEM NOW

- | | | |
|--------------------|------------|---------------|
| 1. Commodore 801 | \$299 ex | \$368 incl. |
| 2. Commodore 1526 | \$369 ex | \$449 incl. |
| 3. Fax 80 MATRIX | \$369 ex | \$419 incl. |
| 4. Epson RX80 | \$459 ex | \$529 incl. |
| 5. Nec Daisy Wheel | \$1,695 ex | \$1,995 incl. |
- Cables available to suit most computers.

APPLE COMPATIBLE SLIMLINE DRIVES

\$299 (EXCL. TAX)
\$339 (INCL. TAX)



PLUGS STRAIGHT INTO APPLE OR WOMBAT
(EXCLUDES CONTROLLER CARD)

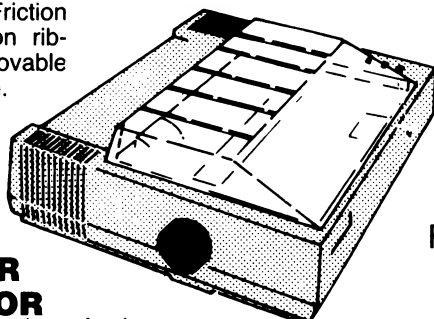
*SCHOOLS

PHONE FOR YOUR SPECIAL PACKAGE DEALS.

FEATURES OF THE FAX 80

Superb print quality • 80cps Bidirectional • Bit image graphics • Full descenders • Italics • Double density and double pass • Normal, compressed and double width • Friction and tractor • Multi-strike carbon ribbon cartridge • Low cost removable print head • Quality construction.

PARALLEL **\$369 (EX TAX)**
\$419 (INC TAX)



CARDS

- | | | | | | |
|-------------------|----------|---------------|-----------------------|----------|--------------|
| • 80 Column Cards | \$129.00 | (\$109.00 ex) | • Disk Controller | \$89.00 | (\$76.00 ex) |
| • Z80 Cards | \$99.50 | (\$89.00 ex) | • Printer Interface | \$105.00 | (\$89.00 ex) |
| • RS232 | \$99.50 | (\$89.00 ex) | • Paddles or Joystick | \$29.00 | — |

BLOCKBUSTER SPECIAL



COLOUR MONITOR

Suits Commodore, Apple, etc.

\$389 inc. tax (\$339 ex)

Manufacturers suggested retail price \$620.00. RGB or composite video similar to unit illustrated.

MONITOR SPECIALS Popular brand 18 mhz green phosphorus **\$179**. BMC 18 mHz G'phos **\$199**.

KAGA — Hi Res Colour **\$399** (all monitors + S/T)

SUPER SPECIAL Osborne 1 — D/Density, 100 columns **\$1595** \$1795.00 inc. tax)

COMPONENT MEMORY SPECIALS

— Best wholesale prices in Aust.

RAM 2114, 4116 @ **\$1.25**, EPROM 2716 @ **\$3.89**, 2532 @ **\$4.88**, IC sockets @ 1¢ a pin, 4864 RAM **\$4.95**. YES! WE'LL TALK ON QUANTITIES OVER 1,000 (add 20% S/T to these).

STOP PRESS

Just landed: New "IBM" Look-a-Like! Full featured, Detachable Keyboard. Only limited stocks on this real bargain.

Compatible with Wombat, Apple 2, Etc. **\$899 (inc tax)**. Phone for details.

BBC • NEC • DIGITAL • COMMODORE • RANK XEROX • OSBORNE • EPSON — SPECIALS — JUST PHONE
ORDERS FOR SAME DAY DISPATCH. FREIGHT FREE ANYWHERE IN AUSTRALIA.

* APPLE IS A REGISTERED TRADE NAME OF APPLE COMPUTERS
* IBM is a reg. trademark of IBM Computers.

DATA PARTS

- **ALBURY: 658 DEAN STREET**
TELEPHONE: (060) 21-8080
- **BALLARAT: 307 MAIR STREET**
TELEPHONE: (053) 31-3399

- **BENDIGO: 27 BATH LANE**
TELEPHONE: (054) 43-4866
- **SHEPPARTON: (AS ABOVE)**
TELEPHONE: (058) 21-7155

TRADE ENQUIRIES WELCOME
CASH/CHEQUE OR
BANKCARD WELCOME HERE.

MAIL ORDER CENTRE
11 EDWARDS STREET,
SHEPPARTON VIC. 3630
TELEPHONE: 21-7155 (058)

all machcode programming. It is convenient, simple to use and flexible.

Pal is available from most dealers or direct through Pittwater Distributors.

Power 64

All BASIC programmers deserve to use the features in this toolkit which has everything from Merge and Renummer to interpret driven key checks. Sound good?

Other features include redefinable function keys, hex conversion, undo (to retrieve new programs), disk commands and much more.

The ultimate utility program, Power is well documented by Jim Butterfield and Brad Templeton, the author of Pal. The real fun begins when utilising the compatibility of Pal and Power programs.

All Power commands may be used when entering source code on Pal – an excellent combination by any standard.

Power is also available from most dealers or direct from Pittwater Distributors.

64 Tips

The following pokes are useful for crash-proofing programs and for protecting valuable software from being copied. The normal value of each location will reverse the previous poke.

POKE 775,200	disables list command; normal value is 167
POKE 808,239	disables stop key; normal value is 237
POKE 808,225	disables restore and stop key; normal value is 237
POKE 818,32	disables save command; normal value is 237
POKE 816,32	disables load command; normal

POKE 649,0 value is 237
disables keyboard;
normal value is 10

Plenty more next month, including a program to convert programs from text files and text files to programs.

Sydcorn 64

The Sydney Commodore 64 Users Group has been doubling in size every month and recently announced plans to move location from the now overcrowded classroom above Computer-wave.

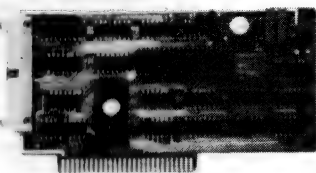
At the time of writing, Redfern Technical College looked as though it would be the final choice. People wishing to confirm the venue for the next meeting, on the first Tuesday of February, should contact Paul Bartolo on 607-6228 or myself on 99-2640. ☐

NEW DISK CONTROLLER BOARDS

The RC1802 and RC1806 have been developed in Australia using the latest DISK CONTROLLER TECHNOLOGY and have many advantages over the Hitachi Types.

RC1802 \$280 inc

- Runs any standard 5" drive (Single or Double sided)
- Runs double density HITACHI DOS
- Now Runs MP3540 drives as double density



PEACH POWER

PEACH POWER

AT LAST!

THE RC-Z80 CPM CARD FOR THE HITACHI PEACH IS HERE



NEW

\$475 EX

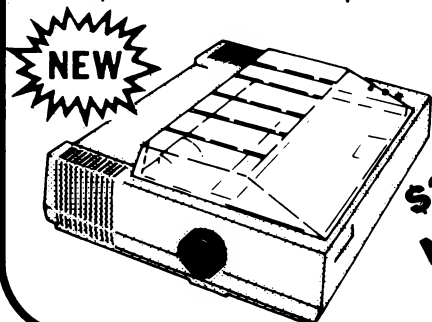
- Uses Z80A CPU — 4MHZ
- 64K RAM on Board
- No Modifications to PEACH
- CPM Licence + Manual inc.
- Normal Operation of PEACH Unaffected

Please Phone
or Write for
further information

ON CONSTANT SALE

COMPUMATE PRINTER CP80

Compatible with Epson FT type III



NEW

\$395.00 EX
NEW LOW PRICE
QUOTE THIS AD.

Please Phone
or Write for
FURTHER
INFORMATION

robs
COMPUTER CENTER

295 Thomas Street,
DANDENONG, 3175 Phone: 791 2900

your IBM computer

By Lloyd R Borrett

IT IS NOT feasible to carry out a full evaluation of all similar software packages before selecting one as 'The Best'. To overcome this, I carefully study all product reviews available and select one package in each category for review. If it meets my requirements it's added to my list of recommended packages.

When consulting with potential users I find most of their software requirements are met by items on this list. If not, we track down a suitable product, and update the list. Often these users have come to me after talking to the sales staff of IBM dealers. Usually they complain of feeling the dealer was recommending only items in stock, or those with the greatest mark-up. Potential users are not in a position to carry out full evaluations, so they look elsewhere for independent advice.

For what it's worth, here's the list. The items marked ** are in day-to-day use. Those marked * are packages which have only been reviewed. The unmarked items are on my wish list, having been selected after reading reviews by others.

Systems Software

Languages:

- ** IBM/BASIC Compiler
- ** IBM/BASIC Program Development System
- IBM/Macro Assembler
- IBM/Fortran Compiler
- Computer Innovations/CI C86 C Compiler
- Logitech/Modula -2 Compiler
- Digital Research/DR LOGO

Utilities:

- ** Central Point Software/Copy II PC
- Peter Norton/Norton Utilities
- ** Rossoft/ProKey
- SSI/P-Edit
- Softcraft/Btrieve
- ** Micro Ware/87 BASIC
- Micro Ware/87 Macro
- Micro Ware/87 Fortran

Applications Software

Communications:

- ** Persoft/SmarTerm/PC TE400-FT
- * Persoft/SmarTerm/PC TE100-FT
- * Microstuf/Crosstalk XVI

Data Management:

- ** Ashton Tate/dBase II
- ** Fox and Geller/Quickcode
- ** Fox and Geller/dUTIL
- Humansoft/DBPlus
- Micro Technical Products/Cardbox

Financial and Spreadsheet:

- ** Lotus Development/1-2-3

- ** Software Arts/TK!Solver
- ** Software Arts/Financial Management Pack

Graphics:

- ** PCsoftware/PCrayon
- Software Projections/Slide-Pro
- BPS/BPS Business Graphics
- Project Management:
- Harvard Software/Harvard Project Manager

Word Processing:

- ** Softword Systems/Multimate
- Oasis Systems/The Word Plus
- Oasis Systems/Punctuation and Style

Educational

- ** Individual Software/The Instructor
- ** Individual Software/Professor DOS

Of equal importance would be a list of the packages tried and rejected, but I haven't the space to include it. Some of these packages are not handled by distributors in Australia, and have to be purchased via United States mail order houses.

Naturally, there are gaps in the list. In some cases this is because the category hasn't come under close study yet, in others it's because the packages available have been rejected.

Getting An IBM-PC At A Discount

I have found you can buy your IBM Personal Computer for 18 per cent less than IBM wants you to pay. IBM manufactures certain parts of the PC, while other manufacturers produce the rest of the system with IBM acting as the middleman.

Some of the IBM components are competitively priced. However, for most of them, and nearly all the components manufactured by other companies, it is a different story. Prices there range from high to outrageous. This is where we can obtain our discount.

I will assume that you require some serious computing power. A suitable configuration would include at least 256K of memory, two double-sided disk drives, one serial port, a printer and a monochrome screen. The following table shows the price for this system, as purchased from your IBM dealer, with only IBM components:

*System unit: 64K memory, 360K disk drive	\$3429
Monochrome display	\$ 644
*Monochrome and printer adaptor	\$ 516
80 cps graphics printer	\$1004
Printer cable	\$ 89
64/256 memory expansion option	\$ 534
Two 64K memory expansion kits	\$ 502
Second 360K disk drive	\$ 821
Async communications adaptor	\$ 188
Async communications cable	\$ 122
Total:	\$7849

Table 1.

To obtain a discount, first buy those items which are unique to IBM. These items are marked in the previous table with an asterisk. The total cost is \$3945.

Next, focus your attention on the remaining items. This, bargain shoppers, is the part of the computer that IBM does not make, and can be purchased in single quantities from the normal distribution sources. The following table gives the prices you should expect to pay:

IBM-supplied components	\$3945
Samkor MCG-12G green video monitor	\$ 185
Epson RX-80FT printer	\$ 740
Tandon TM100-2 disk drive	\$ 385
Sigma Design SDI-ESC	
192K memory, one serial port, games adaptor, free software, one parallel port, calendar clock	\$1000
Async communications cable	\$ 60
Printer cable	\$ 60
Total:	\$6375

Table 2.

That is a saving of \$1444, or more than 18 per cent. If you are still with me, you must be interested, and you will be waiting to find out the catch. Well, there are a few. First, and most obvious, you must give up the convenience of one-stop shopping.

The sources of the cheaper components? Ellistronics in Melbourne assure me that the Samkor video monitor is compatible with the IBM PC, although I haven't tried it yet. There are IBM dealers and electronics stores which have other compatible monitors. Try out any monitor before buying, to see if you find the resolution acceptable.

Most computer stores carry the Epson printer. Just shop around to find the best price. The Sigma Design SDI-ECS multifunction board is but one such board now readily available. If you follow a 'Buy Australian' policy, you might want to check out the Plus-5 board from Personal Computer Peripherals.

The Tandon disk drives can be obtained from Adaptive Electronics, 418 St Kilda Road, Melbourne 3044. Phone: (03) 267 6800. They should also be able to put you in contact with a Tandon dealer in your local area. For the cables, go to your nearest electronics store and buy the bits to make them up yourself.

Another catch is the aesthetics of buying the cheaper equipment. The printer will not sport an IBM paint job. Worse still, the printer, monitor and diskette drive will not have an IBM logo. The rest of the items are out of sight, so who cares?

This next disadvantage might put some people off. If you buy a complete system from your friendly local IBM dealer, it should be delivered completely ►

PROFESSIONAL HELP

THE MORROW MICRO DECISION WAS CONCEIVED AS A COMPUTER AND SOFTWARE PACKAGE TO FILL THE NEEDS OF SMALL BUSINESS AT A COST EFFECTIVE PRICE.

IT HAS MET WITH WIDE ACCEPTANCE IN THIS ROLE BUT AT THE SAME TIME HAS WON THE ACCLAIM OF AN INCREASING NUMBER OF PROFESSIONALS AS A PRODUCTIVITY TOOL.

CAPABLE OF EASY INTERFACE TO DATA CAPTURE EQUIPMENT, DIGITISERS, PLOTTERS AND THE LIKE IT IS HELPING INCREASE THE EFFICIENCY OF SURVEYORS, ENGINEERS AND SCIENTISTS.

*NOT JUST HELPING TO **COUNT** THE DOLLARS BUT ALSO TO **MAKE** THEM.*



MORROW 

FROM **AUTOMATION STATHAM** PTY. LTD.

47 BIRCH ST BANKSTOWN
NSW 2200 (02) 709-4144
TLXAA73316

**A FULL SERVICE MORROW
DISTRIBUTOR SINCE 1976**

ASSCO PTY. LTD.

153 ELEY ROAD, BLACKBURN
VIC 3130 (03) 233-6355
TLX. AA 30333

**VICTORIAN & SOUTH AUSTRALIAN
SALES & SERVICE**



MICRO VISIONS

VIC-20 C 64

NOW AVAILABLE

COMMODORE HARDWARE AND SOFTWARE SPECIALIST



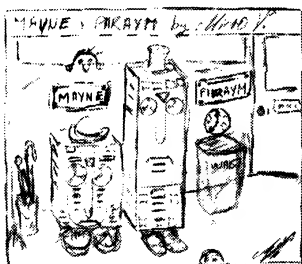
AN 8000 SERIES (CONSISTING OF CBM 8032, 8050 (DRIVE), 8023 PRINTER AND CABLES) ACCOUNTING SYSTEM WITH SOFTWARE FROM \$5320.

Numerical control
editor for
NC program tape and telex
Call for details.

NOW SELLING



'BASIC' Computer programming
courses starting February 1984.
Ring now for more details.



PRAYM: HAL was sprayed today.
MAYNE: What for then?
PRAYM: He was full of bugs!

Contact:
MICHAEL LA ROBINA,
472 ANZAC PDE.,
KINGSFORD, NSW 2032.
(02) 662-4063.

IBM

assembled and checked out. If you buy individual components from different sources, you have to assemble and check them out yourself. The only component that may cause problems is the second diskette drive.

Installing Diskette Drives

You will find detailed instructions in the 'Guide to Operations' manual about removing the cover and gaining access to the internals of the PC. As you should already have the IBM controller board and one diskette drive, you should also have the associated installation manual. For those who don't, a brief description follows.

Probably the hardest part of the whole installation is to remove the cover plate over the opening where the drive goes. Once you have the cover plates out of the way, slide the diskette drive half-way through the front mounting panel. Keep the drive as straight and level as possible as you install it. If you cock the drive, you can catch board components and break them off.

Connect the power supply connector to the bottom side of the logic circuit board. Either connector may be installed in either drive; just make sure that it's orientated correctly. Now, connect the signal cable. These connectors are not interchangeable. Slide the diskette drive in until the front panel is flush with the system unit face plate. Mount the diskette drive, with two 6-32 by 3/8" screws through the side mounting plates.

The final task is to carry out termination and configuration. Termination is easy: just make sure the terminator chip is plugged in to drive A, and remove the chip in drive B.

Configuration requires that you remove the jumper DIP from the new drive and break six of the seven links. Only the third link - counting from the left-hand side, looking towards the front of the system unit from the rear - should remain. The easiest way to do this is to turn the jumper DIP over, lay it on a hard surface, and punch out the unwanted links with a jeweller's screwdriver.

Now, reinsert the DIP, being very careful to get the remaining link in the proper position. To complete the installation, set the system board switches as instructed in the 'Guide to Operations' manual. Replace the cover on the system unit and run the IBM diagnostic program.

Warranty

The final complication in this method

of obtaining a discount has to do with your warranty. If you buy all the recommended components new, they are all individually guaranteed, but not by IBM. If you have problems, it will be your responsibility to determine what component is in error and send that component to the proper place for service.

If an IBM component needs service you must (according to IBM) remove all non-IBM parts before sending the unit in for repair. However, there are already a number of independent service firms which will take on the maintenance of the complete system. So, if during the warranty period you have a minor problem with an IBM component, it should be easier to have an independent service firm carry out the repairs. If it's a major problem, take out the non-IBM components and use the official channels. Once out of warranty, the independent service firm would be used for all repairs.

The problem is not as great as it may at first seem. You can buy less expensive monitors and Epson printers from most IBM dealers. Some IBM dealers are installing Tandon diskette drives, but charging IBM prices. You may be able to get your IBM dealer to install the Tandon drive and charge Tandon prices. Many dealers and independent service firms will supply IBM compatible cables which cost a lot less.

In summary, you can obtain large hardware savings if you are prepared to put up with the possibility of some inconvenience. If you talk to your IBM dealer, you may still be able to achieve one-stop shopping with full warranty cover, but may not achieve the same level of savings.

I admit that a near optimum case has been presented and that I didn't use all these options when putting together my system. At the time my system was purchased, compatible monitors were not readily available, although I've yet to see one with a standard of resolution which matches the IBM monitor. I did buy an Epson MX-100 printer, an AST Research MegaPlus multifunction card, and two Tandon diskette drives.

It is up to you to decide how far you are prepared to go.

IBM-PC User Groups

Don Richards is trying to start up an IBM-PC user group in South Australia. Those of you who are interested should contact Don on (08) 261 9590, or write to PO Box 68, Walkerville 5081.

The first meeting of the Melbourne PC User Group was held late in November

'83. My thanks to those dealers who offered their help, and special thanks to Computer Power, who provided the venue and organised the refreshments.

Over forty people attended the meeting, and a simple survey showed it was a fairly representative group with a diverse range of interests. Everyone was keen to see the group properly established, and an interim committee was appointed. The second meeting will be held at 5.30 pm on Wednesday, February 8, 1984, at IBM's offices, 211 Sturt St, South Melbourne.

The contact for the group is:

Christopher Leptos
c/- Pannell Kerr Forster
500 Bourke St
Melbourne 3000
(03) 605-2222.

Another user group has been formed in the Illawarra area. The Illawarra IBM-PC Club holds its meetings on the first Tuesday of each month, starting at 7.30 pm, at the John Lysaghts Springhill Training Centre.

Public Domain Software

As the deadline for submitting this column grows near I'm close to finalising arrangements for the distribution of the PV/Blue User Group Library diskettes. A summary of the library contents will appear in the next column, along with full details of where to get the diskettes.

The full catalogue, which contains a

table of contents and brief description of the files, is available, post-paid, for \$10. The address for orders is:

PC/Blue Library
c/- PC Connection Australia
8/34 Elizabeth St
Elsternwick 3185.

Make your money order or cheque payable to PC Connection Australia. All orders must be prepaid.

Unprotecting Lotus 1-2-3

For those of you sick of not being able to back-up Lotus 1-2-3, or fed up with requiring a diskette to use 1-2-3 on the XT, here is a patch which disables the Release 1A program's protection mechanism.

First, format a new DOS system diskette, and then use the COPY command to copy all the files from your Lotus 1-2-3 system disk onto the new diskette. The example assumes that a DOS system diskette with DEBUG is in drive A and the new Lotus 1-2-3 diskette is in drive B.

Enter all underlined text exactly as shown; be sure to include spaces. End each entry line with the 'enter' key. The computer responds with all other output.

B>rename 123.exe 123.old

B>a:debug 123.old

-eaba9 90 90

-w

Writing 15F00 bytes

-q

B>rename 123.old 123.exe

Epson FX Series Printers

All the Epson FX series printers I've installed recently came with the internal DIP switches set to select the English character set. Unless the US character set is selected, you will have some strange-looking printouts.

The FX series of printers has a 2K buffer. However, the factory setting of the DIP switches disables the buffer, which allows you to down-load your own definitions for two additional character sets (256 characters). As I've yet to come across a software package which makes use of this feature I suggest you change the switches to enable the buffer. Then, short documents can be printed while you continue with other work.

The settings recommended for Switch #1 (SW1) are:

*	1	2	3	4	5	6	7	8	*
*	OFF	OFF	OFF	ON	OFF	ON	ON	ON	*

Table 3.

WERE \$14.00 NOW \$9.50

WERE \$6.00 NOW \$4.00

WERE \$26.00 NOW \$19.95

WERE \$96.00 NOW \$75.00

WERE \$7.00 NOW \$4.50

WERE \$6.00 NOW \$4.50

NEW YEAR BARGAINS!!

STOCK CLEARANCE PRICES FOR OUR READERS

- ADVENTURE T-SHIRTS
- MI COMPUTER CLUB T-SHIRTS
- APPLE GRAPHICS & ARCADE GAME DESIGN BOOKS
- DOCUMENTATION BINDERS
- MI COMPUTER CLUB TOWELS
- T. G. JOYSTICKS (APPLE)

AVAILABLE ONLY WHILE CURRENT STOCKS LAST!

ORDERS AVAILABLE FROM:		140 JOYNTON AVENUE, (P.O. BOX 21), WATERLOO 2017		PHONE: (02) 662-8888
ITEM	QTY	PRICE		
■ ADVENTURER T-SHIRT				
■ MI COMPUTER T-SHIRT				
■ APPLE GRAPHICS BOOK				
■ DOCUMENTATION BINDER				
■ MI COMPUTER TOWEL				
■ T. G. JOYSTICK (APPLE)				
		TOTAL		

PLEASE RESERVE THE ABOVE BARGAINS FOR:

NAME: _____ POSTCODE: _____ PHONE: _____

ADDRESS: _____

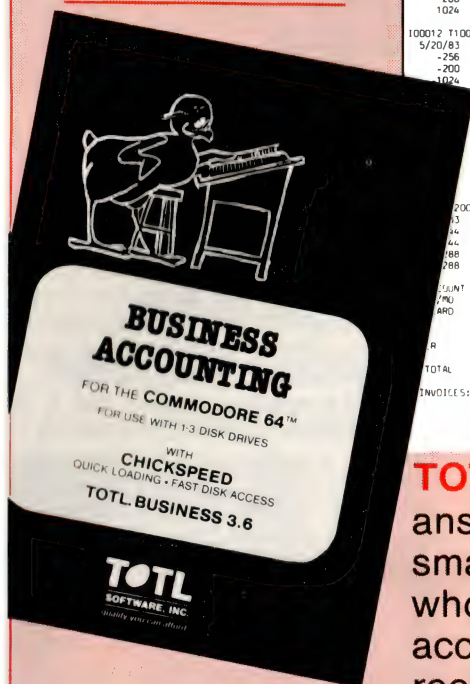
PAYMENT CAN BE MADE PERSONALLY AT ABOVE ADDRESS. OR BY CHEQUE OR BANKCARD.

PLEASE CHARGE BANKCARD NO.

EXPIRY DATE: / / SIGNATURE: _____

TOTL

SOFTWARE, INC.



INTRANS		INVOICE REGISTER		5/30/83		PAGE 1	
INV-#	CUST-#	NAME	TYPE	SALE	SALES CODE		
DATE	ITEM-TOT	TAX	SHIPPING	INV-TOTAL	PAID	BALANCE	
QTY-SHIP	PRICE	AMOUNT	ITEM				
100011	1100	Tyrell Corporation		ON ACCOUNT COD Order			
5/20/83		1352.96*	.00	12.00	1364.96	.00	1364.96
256	1.90	486.40	CARBL1				
200	2.08	416.00	CARBL2				
1024	.44	450.56	PC-1				
100012	1100	Tyrell Corporation		ON ACCOUNT COD Refused			
5/20/83		1352.96*	.00	-12.00	-1364.96	.00	-1364.96
256	1.90	486.40	CARBL1				
200	2.08	416.00	CARBL2				
1024	.44	450.56	PC-1				
		Lindsey Consultants		ON ACCOUNT Order Placed 5/24			
		313.24*	.00	3.00	316.24	.00	316.24
	.43	146.20	PC-1				
	1.16	167.04	PC-G				
		Cordelia Grey		CHG CARD Order Placed 5/24			
	.44	5.28	.00	.00	5.28	5.28	.00
		5.28	PC-1				
200		Laine Industries		ON ACCOUNT Order Placed 5/25			
63	1.90	1019.52*	.00	.00	1019.52	.00	1019.52
44	1.90	273.60	CARBL1				
44	1.90	273.60	CARBL1				
88	.44	126.72	PC-1				
288	1.20	345.60	PC-G				
		1332.76	.00	3.00	1335.76	.00	1335.76
		.00	.00	.00	.00	.00	.00
		5.28	.00	.00	5.28	.00	.00
		.00	.00	.00	.00	.00	.00
		.00	.00	.00	.00	.00	.00
		.00	.00	.00	.00	.00	.00
TOTAL		1338.04	.00	3.00	1341.04	5.28	1335.76

SAMPLE INVOICE REGISTER: WITH ITEM DETAIL

TOTAL BUSINESS is the answer to the needs of small business people who have to keep track of accounting and customer records:

- ★ Files
- ★ Accounts Receivable
- ★ Posting
- ★ Inventory
- ★ Browsing Files
- ★ Customer Records
- ★ Product Records
- ★ Accounts Payable
- ★ Cheques
- ★ Bank Balance
- ★ Vendor & Expense Cards
- ★ Labels
- ★ Printing
- ★ Cash Book
- ★ Sales Book

\$149.95
plus p & p

SPRITE AID - A HIGH RESOLUTION & MULTICOLOUR SPRITE GENERATOR

Sprite-Aid is intended to make creating sprites as easy as child's play. It has been written so that you may use either the keyboard or a joystick to draw your sprite. With SPRITE-AID, you are able to create a complex high resolution or multicolour sprite in a matter of minutes and have the data stored in DATA statements in just seconds. After that, all that's left is writing the program to use that sprite.

Sprites represent one of the most powerful graphic techniques around. Don't let the mathematics get in your way. Enjoy the ease of making your own sprite graphics with SPRITE-AID.

\$28.50 disk
\$24.00 tape
plus p & p



GIVE YOUR VIC20 & 64 IEEE PLUS RS232



INTERPOD

VIC and 64 users

Would you like to be able to access any of these peripherals from your computer?

- 1/4 megabyte disks (Commodore 4040 drive)
- 1 megabyte disks (Commodore 8050 drive)
- 10 megabyte disks (Commodore 9090 hard disk)
- Printers including a wide range of inexpensive IEEE and RS232 matrix and quality printers
- IEEE instruments such as volt meters, plotters etc.

Now you are no longer limited by the VIC or the 64's serial bus. Simply by attaching INTERPOD you can vastly increase the power of your VIC 20 and when used with the new 64, INTERPOD turns the computer into a really powerful system.

With INTERPOD the VIC and 64 become capable of running really professional quality software such as word-processing, accounting, instrument control and many more.

Using INTERPOD is as easy as this: Simply plug INTERPOD into the serial port of your computer, power-up and you are ready to communicate with any number of parallel and serial IEEE devices and any RS232 printer.

\$299.95

+ FREIGHT

THE VIC CENTRE

416 Logan Rd., Stones Corner,
Brisbane P.O. Box 274
Sunnybank Q'ld. 4109
Australia
Tel.: (07) 397 0888
Telex: AA40811

A division of CW Electronics

your CP/M computer

By Bill Bolton

COMDEX/Fall

AHHH! It was BIG. Last year it took the best part of two days to get around everything at COMDEX/Fall, but this year I spent four days just getting to see everything once. The show spread over five different display sites. Three were reasonably close together in the immediate vicinity of the Las Vegas Convention Centre, but the other two were distant from the Convention Centre. Many other COMDEX/Fall attendees that I spoke with weren't bothering to look at the remote sites at all. Someone calculated that there were 21.5 kilometres of aisles at COMDEX/Fall this year.

There was no single thing which stood out as 'the product' of the show – last year it was clearly Lotus 1-2-3. On reflection, the Tandy 2000 came closest. This new micro Tandy is a departure from Tandy's previous policies in that there is no TRSDOS at all for it. The standard operating system is MSDOS and the machine is clearly aimed at taking back some of the market share Tandy has lost to IBM.

The 2000 uses an Intel 80186 CPU running at 8 MHz and uses 16-bit memory. This will make it considerably faster than the IBM-PC and nearly all the rest of the field in terms of raw CPU action. The mass storage capacity is over 700K per floppy disk and a 10Mbyte hard disk version will also be available. On-screen graphics resolution is 600 by 400, again well ahead of the IBM-PC. I'm sure there will be further details elsewhere in *Your Computer*, so I won't repeat them here.

Other trends seen this year include: many more IBM-PC lookalike computers; a lot more talk about porting software to Unix environments 'in the future' (in expectation of AT&T's entry into the micro market place); but conversely, much less interest in currently available Unix-based systems; lots of Lotus 1-2-3 competitors; plenty of interest in 'expert' systems with some fascinating examples being introduced; a developing interest in truly portable computers (some previews of the next generation were available if you knew the right people); a proliferation of Bell 212A 1200 bps modems; window interfaces to operating systems from Digital Research, SofTech and Microsoft (more on that later); and much more IBM mainframe-to-micro communications software and hardware.

Several Australian manufacturers

showed this year. When I went by, the Amust stand was crowded, as was the Labtam stand. Unfortunately, the Australian contingent was in one of the remote display areas and didn't get the attention it deserved.

This year I tried extremely hard to contain the amount of paper I had to ship back to Australia by only collecting information on the products that were really important for me. Even so I ended up with half a dozen 'show bags' full of brochures, catalogues, pamphlets and so on.

dBase Run Time Conference

The first dBase run time conference was held on H.M.S. Queen Mary at Long Beach, California, from November 10th to 12th. The conference was intended for software developers who use dBase II and the new dBase II Run Time package.

The conference had several sessions on software development techniques, financing development, establishing distribution, promotion and so on, which everyone attended. Later there were optional sessions on various technical aspects of dBase such as: 'Inside the Black Box', in which Wayne Ratcliffe spoke about some of the internal organisation of dBase II; 'New Versions of dBase' which gave a peek into the future; and others which covered things like documentation and marketing. There were six optional sessions in all, but only time to attend three of them. This was disappointing as I would have liked to attend all six technical sessions. Ah well, at least they taped all the sessions and I have the cassettes on order.

On the second evening, Ashton-Tate threw a cocktail party at the 'Spruce Goose'. The 'Spruce Goose' was Howard Hughes' gigantic flying boat. Still the largest aircraft ever built, it is now enshrined in a massive dome at Long Beach where it made its one and only flight. The dome is set up as a memorial to Hughes and his achievements in the field of aviation and you can walk through part of the 'Goose' itself.

The conference was delightfully informal on the whole and I got to meet some real 'characters' from the US software scene. Ashton-Tate plans to hold further dBase II conferences in the coming year.

Windows

Microsoft tried to freeze the micro

market for window products by announcing their 'window' interface for MSDOS just a few weeks prior to COMDEX/Fall. The Microsoft window interface requires software to be written specially to use the window interface and it won't be available until April in the US anyway.

Microsoft had an impressive list of software suppliers who were going to support their windows, but IBM was noticeable by its absence from the list.

Meanwhile, at COMDEX, both Digital Research (for CCP/M-86) and SofTech (for P-system) introduced window interfaces for their respective operating systems, which will work with any software. This effectively unfroze the window marketplace again.

I'm not sure who has the best window interface yet. It will take a bit more time to tell. All three overseas vendors should have their window interfaces hitting the market at around the same time.

The Intel 186 and PC/MSDOS

There has been some speculation about why IBM didn't use the Intel 80188 in the PC Jr. When IBM customised PCDOS for its PCs it used a couple of the Intel reserved vectors for PCDOS, despite Intel's clear reservation of these vectors for future use. Well, use them they did in the 80186/88 chip.

MSDOS doesn't use these vectors, so there is no reason why an MSDOS machine cannot use the 80186/88, as the new Tandy 2000 does. There are several claims and counter claims flying around between Intel and Microsoft on this one, while IBM sits back and remains silent. I wonder what the 'real' story is? Just how compatible are PCDOS and MSDOS?

PAMS Numbers

Mi Computer Club BBS (MiCC-BBS): (02) 662-1686 24 hours EST
Micro Design Lab RCPM (MDL-RCPM): (02) 663-0151 24 hours EST
Sydney Public Access RCPM (SPA-RCPM): (02) 808-3536 24 hours EST
Melbourne CBBS (MICOM-CBBS): (03) 762-5088 24 hours EST
Sorcerer CBBS (SUGA-CBBS): (03) 836-4616 24 hours EST
Gippsland RCPM (GL-RCPM): (051) 34-1563 24 hours EST
Perth RMPM (WA-RMPM): (09) 381-6070 6pm-9pm WST.

your HITACHI computer

By Dom Swinkels

THIS MONTH we take a closer look at the use of PEEK and POKE commands in BASIC (at the request of a reader), and I have used this occasion to list some of the useful memory locations you might like to PEEK at.

The title of the column has been changed to include Hitachi computers other than just the Peach, such as the 16-bit machine, which is now generally available. Also, the names 'Peach' and 'Success' (for the 16-bit machine) were apparently registered by John Miller. Since he is no longer associated with importing the Hitachi machines into Australia, these names are no longer to be used to describe the Hitachi machines. So until someone comes up with some new catchy names I guess we're stuck with MB-6890 and MB-16001. Any suggestions?

I thought of 'Little Hit' and 'Big Hit', but I don't know what I would call a future machine based on a 32-bit microprocessor. In any case, what do you call an MB-6890 with a Z80 card in it? If you have any suggestions send them to the letter column of *Your Computer*.

PEEKs And POKES

The PEEK and POKE commands in BASIC allow us to interact with the computer at its lowest level, since they allow us to read a memory location (PEEK) or to modify a memory location (POKE). We have used this capability previously to print out segments of memory (MEM-LOOK1 program in the October 1982 issue) and to enter a small machine language routine to make sounds on the speaker ('Sounds' in the March 1983 issue).

We can read any memory location, but we can only modify those locations which are *capable* of being changed; that is, the RAM part of memory. The Read-Only Memory (ROM) is exactly that; it can only be read.

PEEK and POKE are clearly complementary BASIC words and in any manual should be considered together. The purists will argue that POKE is a command (it tells the computer to do something) and PEEK is a function (it returns a value). My practical answer is that it is much more important to see these two BASIC words together and to stress their complementary nature than to stress their differences.

There are of course differences in format and these are again best seen side by side. The formats are:

<variable name> = PEEK(<memory location>)

POKE <value 0-255>, <memory location>

Note that with PEEK the memory location is placed between brackets (as for all functions, for example SQR(10), says the purist), while with POKE no brackets are used.

Since PEEK and POKE operate on a single byte (8 bits) the range of the value POKEd into memory or returned to the variable by PEEK must be in the range 0 to 255, because 255 is the largest number we can express in an 8-bit binary code. PEEK does not have to be used with a variable but can be made part of any statement in which an integer number can be used.

The BASIC operating system of the MB-6890 uses a number of memory locations to keep track of things such as the date and time, the current mode of operation such as screen width, size of the scrolling console, the type of cursor being used and whether any level of protection is to be applied to the current program. Some of this information is available via normal BASIC commands (for example TIME and DATE), or it can be obtained by PEEKing in the right locations. Once the locations for this type of information are known you can also modify them by POKEing a new value into that location. Sometimes you find that additional capabilities exist, which are not accessible via the standard BASIC commands.

As an example, let us look at the control of the cursor. The third parameter of

the LOCATE command allows us to set four types of cursor, namely:

- 0: non-blinking underline
- 1: no cursor
- 2: fast blinking underline
- 3: normal blinking underline.

Now, the type of cursor used is controlled by the value of memory location 277 (&H115 in hexadecimal). You can experiment with this by changing the cursor type using the LOCATE 0,0,x command and seeing what effect this has on this memory location using PRINT PEEK(277). Next you may want to POKE some different values and see the effect this has on the cursor. For example, try POKE 277,60. This should produce a half-block cursor, not possible using the above LOCATE options.

Table 1 gives a list of some of the MB-6890 memory locations you might want to PEEK at for information and which you might want to change by POKEing. However, a word of warning: the operating system is quite complex and changing one system variable may create a conflict elsewhere. For example, changing the starting location for user BASIC programs by POKEing a new value into locations 29 and 30 will not move the other related pointers or move your actual program. The results are unpredictable and the system will probably get hopelessly lost.

My source for most of the information in Table 1 is 'Peach ROM Notes', by Bruce Rossell and Howard Viccars. It is available together with recent updates

Table 1. Useful MB-6890 memory locations.

Location(decimal)	Information stored there in hexadecimal.
29 + 30	Start of user BASIC programs.
31 + 32	Start of variable storage area.
33 + 34	Start of array storage area.
35 + 36	Start of free space.
37 + 38	Start of string space.
43 + 44	Top of string space.
139	BASIC error message number (=ERR)
140 + 141	Line number of the last error (=ERL)
147 + 148	ON ERROR pointer.(points to memory location)
163 + 164	Start of current screen page.
165 + 166	End of current screen page.
180 (B4)	Program protect flag. (0 = unprotected)
277	Cursor type flag.
279 + 280	First line number which cannot be listed.
283	Default disk drive number + 128
328 + 329	Go address from last LOADM or EXEC.
460 + 461	Pointer to start of PF keys storage.
534 - 539	BASIC's time - one byte per digit. (=TIME\$)
540 - 545	BASIC's date - one byte per digit. (=DATE\$)
584	Value of last NEW ON x.
632 - 887	BASIC's 255 byte command line.
984 + 985	Top of available memory.

from The Software House, P.O. Box 70, Weston ACT 2611, for \$28.00.

The information relating to protection locations did not come from the ROM Notes and perhaps requires some comment. After I discussed the UNLIST command in an earlier issue, I received a number of letters on the topic of program protection and on making information available about protection.

My view is as follows: anyone who has purchased a computer is entitled to know all about its operation and its capabilities, including how to protect programs from casual observation or modification. Computer owners are also entitled to know how to undo this protection, since otherwise they could not modify their own programs subsequently.

This does not mean that I encourage software piracy – far from it. If there were less piracy, software might be more reasonably priced – and if software were cheaper there might be less piracy; a real chicken and egg situation. However, there are better ways to protect software than to try and keep details of the operation of the MB-6890 secret, so I have included information about protection locations in TABLE 1.

Once a non-zero value is POKed into memory location 180 you can no longer LIST or modify the program. PEEK and POKE will no longer work, so you cannot undo the protection by POKing zero into location 180. There are several ways of recovering from this. The simplest method is to go into the monitor by typing MON + RETURN followed by M B4. The monitor will respond by giving the current contents of B4 (hex), which can then be modified by typing the new value (0 to undo the protection) + RETURN. To return to BASIC enter Ctrl D.

Big Brother

The big brother of the MB-6890, the new 16-bit machine from Hitachi, was to be known as the 'Success'. I was able to play with this machine for a couple of days by courtesy of Computer Cellar of 136 Maitland Road, Mayfield NSW, Newcastle's Hitachi (and other computers) dealer, and subsequently for a longer period by courtesy of Computer Innovation Group Pty Ltd of 11/263 Alfred Street North, North Sydney, who are the NSW distributors.

The MB-16001 comes in three parts. The main unit contains the main circuit board, slots for additional boards, a speaker, a parallel printer port, an

RS232 port, two slimline 13 cm floppy disk drives and the controller for these. A nice feature is the clipboard front of the unit, which allows you to clip a sheet from which you are typing at a convenient angle and location. The unit is sturdy and can be placed well back from the keyboard.

The keyboard is attached via a flexible lead, which allows it to be moved easily for your comfort. When you are not using the computer the keyboard can be placed on top of the main unit to make the desk space available again. The keys feel slightly rough and seem to have less travel than on the MB-6890. This makes them appear to be closer together and at first resulted in more misstrikes than I usually get on the MB-6890. An improved keyboard with keys similar to the MB-6890 is planned and should be available by the time you read this.

The greatest asset of the MB-16001 is its colour graphics capability. The graphics display consists of 640 by 400 points and each point can be in six different colours, each at two levels of brightness. In addition there are white (two intensities) and black.

There are powerful graphics commands such as CIRCLE, LINE, DRAW 'string', PAINT and so on. In addition there are graphics GET and PUT commands, which allow you to GET a rectangular area from the graphics screen and store it in an array. You can then later PUT the array to another part of the screen and reproduce the original graphics.

Another new command is the PALETTE command. The colour code used by all the commands is stored in a look-up table, and the PALETTE command allows you to change the values in this look-up table. The result is an immediate change in the corresponding colour all over the screen. This can result in some very impressive displays. Finally, the graphics and text displays (16 pages of 80-character width) are independent, and a graphics page and a text page can be displayed simultaneously and cleared selectively.

One of the main differences between the MB-16001 and the MB-6890 is that BASIC is no longer stored in ROM but comes on disk. This has a number of advantages. It means that it will be much simpler to fix bugs (what bugs??) or make improvements, because all that will be required is to issue a new disk with the new version of BASIC on it. It is also much easier to make other lan-

guages available, and I understand that FORTRAN, Pascal and COBOL are planned to be available soon. I have in fact seen some literature saying they are available already, but my definition of available is that I can walk into any Hitachi dealer and inspect a copy.

For the moment we are limited to BASIC, so let's take a look at some of the differences. One is enhancements, which were not available on the MB-6890. Many of the above graphics commands are new, and you can now play music with a PLAY 'string' command.

It is now easier to send things to the printer, since we have LIST (to the screen), LLIST (to the printer), PRINT (to the screen) and LPRINT (to the printer).

However, if you plan to run some of your MB-6890 BASIC software on the MB-16001, you will have a few problems because of a number of minor differences. For example, many BASIC words on the MB-16001 require a space after the word. Thus FORJ=1TO10 will work on the MB-6890, but does not work on the MB-16001. It requires FOR J=1 TO 10. This is easier to read and takes up a little extra space in a LIST file, but there is no shortage of space in the MB-16001.

The token values for the MB-16001 are of course quite different, and the best way to get a program from the MB-6890 across to the MB-16001 is to make a LIST file on disk and then send it across via the RS232 ports on the two machines.

This leads me to mention another difference between the two machines: the standard RS232 port is COM0: on the MB-6890 and COM1: on the MB-16001. Similarly we have LPT0: on the MB-6890 and LPT1: on the MB-16001. There are no doubt many other minor differences, but many of them can be edited out rather quickly.

BASIC on the MB-16001 runs faster, as you'd expect, but the exact increase in speed depends on what you are doing. I did not have time to run the standard benchmarks, but here are some of my impressions. There is no increase in the speed of printing on the printer, since this is controlled by the printer. Screen prints seem to be about 50 per cent faster, while simple loops are about 15 per cent faster on the MB-16001. On the other hand, I calculated EXP(38) 1000 times and found it to take 3.5 times as long on the MB-6890 as on the MB-16001. The exact increase in ►

Direct Computer Sales

We offer a range of
Computer equipment for

- ★ BUSINESS
- ★ ENGINEERING
- ★ SCIENCE
- ★ EDUCATION
- ★ HOME

IBM



OSBORNE

VIC 20

HURSTVILLE
198 Forest Road,
Hurstville Shopping Centre
(02) 570-8344
TELEX: AA 21049

BANKSTOWN
Cnr. North Terrace & The Appian Way,
Bankstown Shopping Centre
(02) 708-5311

Direct Computer Sales
for direct customer satisfaction

HITACHI

speed therefore depends on your program.

'Success'-ful Manuals

The quality of the manuals with the MB-6890 have always been a sore point for many users, and it was the difficulties I had when I first bought my machine which started me writing about the MB-6890.

When I had my first look at the MB-16001 it came with some draft manuals prepared by Delta. Hitachi has now produced a set of three well-printed and good-looking manuals in looseleaf three-ring binders. These manuals are clearly based on the Delta drafts, with the result that the English is generally quite good. Some of the same errors and omissions still occur and some new ones have been added (like the mention of the SHIFT key without the F!), but all in all it's a major improvement over the MB-6890 manuals. However, further improvements are certainly possible and I have offered to edit them and suggest improvements (for a small fee, of course).

One major criticism is the use of two alphabetic sequences for the BASIC words, one covering commands and the other covering functions and system variables such as TIME, DATE, ERR and so on. In my view the only useful sequence is a single alphabetic one. The user should not have to know that PEEK will be found under functions and POKE under commands. And what about SCREEN? There is a SCREEN function (which returns information

about the currently displayed screen) and a SCREEN command (which sets the screen mode and page).

Since I am naturally curious I checked out some of the BASIC words and found a few not mentioned in the manual, such as KPOS and KLEN (any suggestions?) and LCOPY (copy the screen to the printer?). I don't know whether these are omissions in the manual or bugs in the BASIC, like WHILE and WEND in the MB-6890 BASIC.

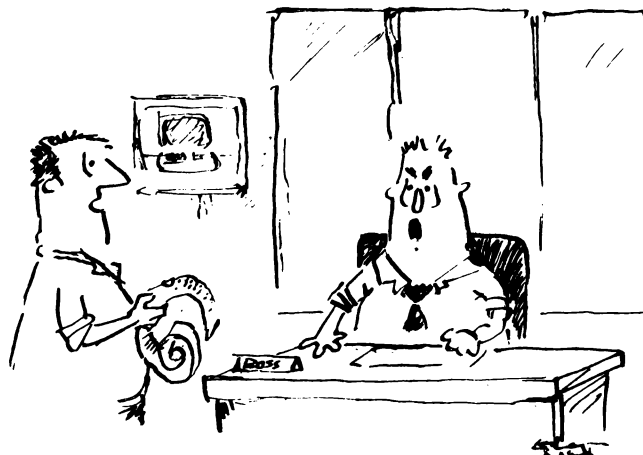
All in all, the MB-16001 is an impressive machine at an attractive price, and if the suppliers can get their manuals and software act together it should compete well with the other 16-bit machines. In particular, they would do well to publish a list of software written for the IBM-PC which will run on the MB-16001. I hope to report on some comparisons with the IBM-PC and on software compatibility with it soon.

P.S. I have been asked to pass on the following invitation:

The membership of the Peach Computer Users' Group Queensland invites MB6890 owners/users to join their group, which meets at 7.30 each fourth Tuesday of the month at Taringa Primary School, Morrow St, Taringa, Brisbane. The group offers a software library, tech. sheets, advice, support, and so on.

Contacts: Leo Burke, Pres: (07) 356-6080; Glen Thwaite, Treas: (09) 398-4341; and correspondence to Brian K. Williams, 19 Patrick St, Norman Park 4170; also Australian Beginning Username WILLPATRNORM. □

READER'S CARTOONS



Sir... I think the computer just made a mistake. It just sent 15 tonnes of unsalted pork to the Jewish synagogue...

SUBSCRIBE TO

your computer

MAGAZINE FOR BUSINESS AND PLEASURE

**PLUS! FREE
MEMBERSHIP TO
MI-COMPUTER
CLUB!**

and every month you can keep right up to date with the exciting/realm of computing. Read our news and reviews on business and leisure machines, software, peripherals and "gadgets" — and don't forget our tutorials and the pocket programs you can use!

PLUS



If you subscribe to YOUR COMPUTER magazine this month you will receive FREE membership to the MI-COMPUTER CLUB. This entitles you to big discounts on floppies, folders, books, and software; a monthly newsletter; interactive membership — with members Australia-wide; problem help from Les Bell; eligibility to join the club bulletin board; and more!

**ACT NOW! SUBSCRIPTION
RATE RISE IS DUE SOON**

CUT OUT AND MAIL



**your
computer**
MAGAZINE FOR BUSINESS AND PLEASURE

\$24 SUBSCRIPTION

140 JOYNTON AVE.
(P.O. BOX 21) WATERLOO 2017
PHONE (02) 662-8888

HERE IS MY APPLICATION FOR ONE YEAR'S SUBSCRIPTION TO **YOUR COMPUTER MAGAZINE**. I UNDERSTAND THIS ALSO ENTITLES ME TO BECOME A **FREE MI-COMPUTER CLUB** MEMBER AND TO PARTICIPATE IN ALL THE CLUB HAS TO OFFER.

Mr/Mrs/Miss/Ms

Address

..... Postcode..... Phone



Please charge Bankcard No

--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--

Expiry Date...../...../..... Signature

your MICROBEE computer

By Richard Pakalnis

HELLO AND WELCOME BACK. I trust you enjoyed the Christmas break. I certainly will (did). We work two months in advance here, you know. So back to work and the first thing I want to say is goodbye.

Goodbye?

Yes, it's so long, folks. My duties and responsibilities here at *Your Computer* have grown somewhat and it has become difficult to give my best to both the column and the magazine proper.

As I said last month I wish to thank all those who have involved themselves in one way or another and made this column what it is.

Thanks

So what happens now? Have no fears, my friends, for I have asked Mike Newnham (he has appeared on these pages before) to take over. Mike knows his stuff, and it's time we all took a step up in our ever-continuing microcomputing education.

Mike doesn't know of my plans yet, but let's keep that between us, shall we?

Competition

The Sydney MicroBee Users' Group is having a competition to find useful application and demonstration programs for the Bee. First prize is a green screen monitor from Jaycar Electronics, and winners in each section will receive one of the superb Mytek programs to the value of \$25.00. Further prizes will be announced later.

Programs entered will become Public Domain and will be offered for publication in this magazine, *The Beeline* and other User Group magazines.

The competition is open to anyone, but winners who are already members of S.M.U.G. will have their subscription fees to the group refunded instead of receiving a prize. The competition will close on the last day of February 1984. Final judging will take place at the S.M.U.G. meeting in March.

Programs are to be well sprinkled with helpful REMs and should be easy for a beginner to understand. Programming style will be taken into account (FOR - NEXT loops to be indented and so on). Sections are:

1. Graphics demonstration program.
2. Music demonstration program.
3. A simple (but interesting) game.
4. An application program - simple but useful in the home or office.

5. Miscellaneous section - a program which does not fit into any of the first four categories.

You can send your entries to:

C/- Colin Tringham
6 Tunks Street
Waverton 2060.

P.S. Copies of *The Beeline*, the official newsletter of S.M.U.G., are available for sale from Jaycar/Electronic Agencies and Applied Technology (Waitara) at \$2.00 a copy. Take my word for it, you will not get better value for money.

Tsk. Tsk. Still No Disk!

Well, there are some. Applied Technology have recognised the need for the supply of their programs on disk, but will start with limited quantities.

For those of you who have waited far too patiently for programs on disk and those who wrote and complained - take heart. This month we'll see the Top Ten programs on disk, selling for around \$19.95 each. It's a small start, but it is a start. The following months will see more and more releases. The sooner the better I reckon.

Talking Software Review

Mike Newnham has reviewed Beetalker and Support Software, a speech synthesis package for us. He writes:

A computer can control a robot arm to move its own pieces in a game, it can respond to human speech and even speak to us in turn. Manipulators and speech recognition hardware are probably out of reach of most hobbyists at the moment, but it is now possible to provide your computer with a voice for a reasonable cost.

Many MicroBee owners have probably experimented by now with the pulse width modulation technique used to enable the Bee to perform as a digital 'tape recorder'. This process involves the digital sampling of human voice and storing it in memory. All this stored data is then used to turn the inbuilt speaker on and off to produce the recorded speech. The limitation with this method is that to achieve reasonable clarity, a very high sampling rate must be used. A few seconds of speech will use perhaps 16K of RAM. Reducing the sampling rate reduces the amount of memory used up, but also tends to garble the output.

An alternative to this method is to use one of the speech-synthesis I.C.s on the market. All you need is the speech chip, some support hardware and software

and you are up and running with machine voice. If you'd rather have computer speech without going to all that trouble, there are ready built devices available. At this time, the cheapest by far is a device called BeeTalker.

Designed to plug directly into the parallel port on the MicroBee, BeeTalker comes assembled, ready to use and with a manual for only \$99.00. It is manufactured and marketed by Robotron, the people who gave us BeeThoven.

Unlimited Vocabulary

BeeTalker reproduces speech by building up words from devices called allophones, which are just speech sounds like 'th', 'ch' and so on. The manual explains these in excellent detail. The BeeTalker vocabulary is unlimited and will say anything you tell it to. The quality of speech reproduced is a far cry from those earlier devices with heavy American accents.

For some time, the Votrax synthesis IC was the only readily available device for the hobbyist and cost around \$69.00 for the chip itself. BeeTalker uses a more recent chip, the price of which enables BeeTalker to be sold for only \$30.00 more for the whole package. Having heard speech from both devices, I have to say they are both clear and understandable, but I believe that the BeeTalker is less mechanical sounding. There is no drawl and the words are pronounced crisply and clearly.

The documentation provided with Beetalker is first rate, consisting of a 44-page booklet with clear instructions and detailed explanations, to help the user master the techniques required.

BeeTalker is backed up by two optional software packages. They are not necessary to make the device talk, but they make BeeTalker very flexible.

The first of these programs is the Speech Development Program, a menu driven speech editor which allows you to build up words and sentences using all the allophones available. With a movable cursor, the user selects sounds to be incorporated in a phrase. Speech created using this program may be saved on tape in one or two formats. The first of these creates a file of allophone data for later use with the program. The second format creates a file of BASIC DATA statements with the speech variables saved as variables in the DATA statements. This file is reloadable from BASIC. It is possible to load

the Development program into your machine, exit to BASIC, load the file and have the BeeTalker pronounce the speech data using a simple BASIC program. The Speech Development Program is available for \$29.50 and provides a fast and easy means of experimenting with computer speech.

The second program is Bee'n'Talk. This differs from the Development program in that it translates written text into speech and will pronounce numbers up to 99,999. The user types in his sentence or short story and sends it to BeeTalker by pressing RETURN.

Bee'n'Talk is a very clever program. For instance, it will discriminate between words such as 'bough', 'cough' and 'though'.

Most speech is pronounced correctly from normally written words, but there are some limitations. Considering there are about half a million words in the Oxford dictionary, the range of allophone permutations is extremely large. To have Bee'n'Talk pronounce them all correctly would require more memory than

the MicroBee has available. Hundreds of words would have to be tested individually, since they don't follow common rules of pronunciation. An example is 'MACHINE' which has to be spelt 'MAS-HEEN' to sound right. Everyday speech is no problem. Bee'n'Talk handles it quite well.

With Bee'n'Talk In Your Machine

With Bee'n'Talk loaded in your machine you can exit to BASIC and assign BeeTalker as an output device. Type in OUTL 6 and all subsequent LPRINT and LLIST command data will be passed to BeeTalker via Bee'n'Talk. In other words, program output will be spoken. BeeTalker will verbally list a program. There are some surprises too. Characters such as () + - / and others are voiced as 'open brackets' 'closed brackets' and so on. Since the device is pronouncing the text, it will utter nonsense when it encounters CHR, for instance. On the whole the verbal listing of a program is clear and understandable.

At \$49.50, Bee'n'Talk is not the cheapest program available, but it does a lot of work and is well written. It allows you to make BeeTalker say just about anything you want. A program with one of the silicon psychoanalysts having its output passed to BeeTalker would certainly be an attention getter at a party. BeeTalker and its support software extend the capabilities of the MicroBee in an exciting direction, without the need for a large financial outlay.

While the device certainly has novelty value, there are practical aspects also. The computer is able to attract your attention by speaking to you. It can announce its moves in a game and voice is certainly more effective than beeps, to signal events occurring during the running of a program.

Review Summary

Review products came from:

Robotron

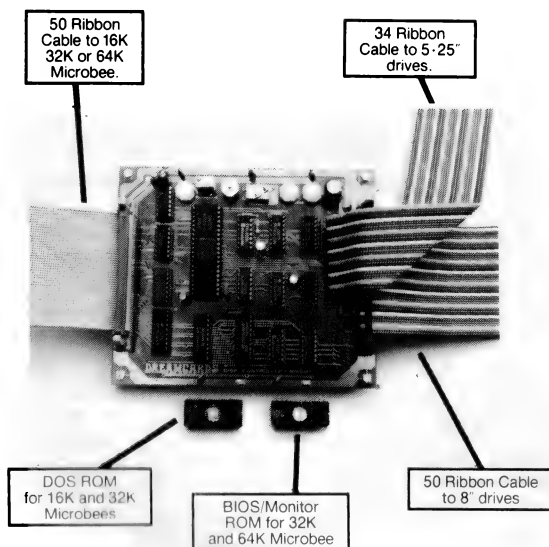
PO Box 232

Mooroolbark 3138.

Bee'n'Talk is available only from Applied Technology. ☐

SHIFT YOUR MICROBEE INTO HYPERDRIVE WITH DREAMCARDS LOW-COST "DREAMDISK CONTROLLER"

\$299.00
inc. tax



NO OTHER disk system can match the quality, versatility, performance and sheer value for money of our DREAMDISK! Some of the features offered by the "DREAMDISK" are:

1. Runs on 16K, 32K and 64K Microbees. A versatile operating system ROM is plugged into 16 or 32K Bees to give full access to the disc system, whilst retaining all existing cassette options. You can later easily upgrade to a full 64K system with our memory upgrade at a very reasonable cost. BIOS/Monitor ROM also comes standard to run CP/M on the 32K and 64K machines (CP/M optional extra).
2. Handles up to 4 drives; 8", 5 · 25" or mixed (with connections on board for both). Plug in the drives and away you go—it's as simple as that. Single or Double sided, Single or Double density, giving capacities from 96K to a massive 1 · 6Meg.
3. Shugart compatible controller board can handle drives such as Teac, Mitsubishi, Sony, Hitachi, M.P.I., etc.
4. Under CP/M it's the only system compatible with Applied Technology, Kaypro, Xerox, TRS-80, and Osborne disks (thereby giving you access to 1000's of pieces of software).

CIRCUIT BOARD, DOS, BIOS, AND MANUAL FULLY ASSEMBLED & TESTED \$299.00 INC. TAX

Complete Single Drive Unit \$699.00 inc. tax
and Dual Drive Unit \$999.00 inc. tax



DEALER ENQUIRIES WELCOME
PROGRAMMERS WANTED! TOP RATES PAID!
171 MORAY ST. SOUTH MELBOURNE
PHONE: (03) 690 8283

Microbee is a Registered Trademark of Applied Technology
TRS-80 is a Registered Trademark of TANDY ELECTRONICS
CP/M is a Registered Trademark of Digital Research.

your TRS80 computer

By Rod Stevenson

REGULAR READERS may think my repetitions are an indication that I've nothing more to impart. Not so: the reason is that newcomers haven't seen my earlier words and they keep asking the questions we all did as newcomers.

So, I repeat my advice not to disregard the tape recorder after the program has finished loading. As well as leaving the capstan roller under pressure, thus possibly creating a flat spot on it, there is the point that when the tape stops the program will still be directly under the head. This means the piece of tape exposed will have data recorded on half of it, and the piece of tape still around the right-hand guide post of the cassette will have data too. If this tape is left in such a position, particularly under the tension which results from not pressing the stop button, there will be a 'kink' formed in the tape by the guide post.

This will flatten out of its own accord with time, but surely it's wiser not to let it happen in the first place? All that's necessary is to rewind the tape after use. This is one reason for the leader provided on tapes; it makes one wonder why so-called 'data' tapes are made without leaders.

Again, let me push the results of my own experience and say that I've had the most consistently good performance from TDK-D cassettes, not with the special data tapes. Indeed, I've had some very poor results with some of the expensive data cassettes. What was worse than a poorly recorded signal was the propensity for some of them to lose their recorded data over a short time.

Those readers who think all their problems will be solved by resorting to a disk system would be well advised to read my earlier columns for a more complete coverage of the mechanics of successfully using a tape system – or send me an explanation of the problem with a stamped, self-addressed envelope for the reply.

There are reasons for using a disk system (mine is), but the thought that it's the only way to achieve reliable storage is an erroneous one. I don't know one person who's not lost data from a disk – certainly there's always a reason, but there is with tape losses too.

Printing Nothing

A few issues ago I pointed out that some printers require an LPRINT" rather than just an LPRINT, and others require an LPRINT" " to perform a line

feed. From the feedback I've received (and I'm always pleased to get feedback in any form) it's obvious I should have added that the real answer is to do your own experiments and determine for yourself what your printer needs. Having found a set of rules, they will remain the same rules of use for every program you write.

This is also true for the question of when a semi-colon is needed to format screen output in the printing of string variables, string literals, and numerics.

While I'm happy to answer letters seeking help, I do think little tests like these are part of the fun of programming. Particularly as, unlike hardware problems, once fixed and understood the problem won't return.

Hardware Problems?

From the last sentence readers may infer I've recently been plagued to some degree by hardware unhappiness. It's true. Some even suggest that just as dogs can sense when their victim is afraid of them, so the little black things with the silver legs can sense me!

Having got through the latest burst of attempts to intimidate me, I'm pleased to be able to report that it was all overcome by logic – and by belonging to a users' group.

The significance of this last is not that I could simply give it to a hardware expert to fix (what reader would be cynical enough to think that of me?), but that I could locate from the membership list a member with an identical system and take the whole lot around to his place and set about exchanging pieces one-by-one until all was proven. The problem turned out to be the floppy disk controller: it would work in another system, but not in mine. I can only assume a sensitive current requirement or some other devious fault.

Yes, I know I could have taken the whole lot in to Tandy to be fixed, but although they've now relaxed their rule about servicing/repairing any modified equipment (mine has in-keyboard memory and a 'foreign' lower case modification), I can't feel happy that they would not just assume the fault was in the modifications (which it wasn't), and charge me to say so. It may be an injustice to Tandy, but the stories I've heard of their repairing attempts don't fill me with confidence. Not that they're alone in needing more than one attempt at repairs in the computer-field.

Failed Memory

The other hardware fault I've had recently with my Model 1 was a failed memory chip. As I have my memory in the keyboard I'm wondering if this is a good technique, since this is the fourth chip to fail. Two have been the original Tandy 16K, and two have been the additional chips. The question is whether the claim is valid that the extra heat generated is causing the problem.

However, I know many others who've done exactly the same to expand memory and have yet to experience any problem at all. I've even read that it makes for a more reliable system because the memory is all together in the keyboard without the connecting cables there would otherwise be, and the memory is not near the power supply as it was in some models of the expansion interface.

I'll be happy to include in a future column any results readers would like to pass on regarding success or problems with in-keyboard memory on either a Model 1 or a System 80. While I do know many System 80 owners who've added 32K in their keyboard, I also know those who've added only 16K because they are positive it can't cope!

Detecting Failure

Perhaps I should say that one can become particularly upset by a failure in the first 16K of memory. The system may not initialise. One is apt to assume the worst.

Or the chip may become heat-sensitive, so all is well for an hour until things go crazy. Then there seem to be DOS errors, or a huge variety of different symptoms – a totally blank screen is somewhat frightening. If it is a heat problem, the patent memory test programs don't seem to help, since they can't be expected to indicate a fault before it develops, and after it develops you can't load the memory test program. So the test seems to be to heat the chips with a hair dryer until they go faulty, then isolate the faulty one with freeze spray. At least, this is the only way I could find success.

It's Worth Gold

For around \$25 one can buy a strip of gold edge connector contacts to treat a Model 1 or a System 80. I too have seen the comments in the American TRS specialist magazines that there's

no need, but if you are experiencing spontaneous reboots, or 'sudden death' (dropping back to Mem Size), or a number of other effects you may not immediately associate, I can assure you it's worth the \$25 investment. As proof, just try cleaning the contacts and see whether it makes a difference. The cleaning will last only a week, but you will have found the cause.

On this subject, it's worth saying that many hardware faults are mechanical rather than electronic – such as the cable which has been unplugged so often it has almost, but not quite, come apart, thus making an intermittently faulty contact. Or the socket that's a bit loose and falls out just with the vibration of people walking into the room – don't laugh, my disk controller chip fell out of its own accord!

LDOS Hint

I'd expect that most people have their LDOS configured to use printer and keyboard filters, minidos, verify and so on. But what's not obvious unless you think about it is that your configuration is set up to save the nominated files in high memory; it will not work on a system with less memory.

So the answer to the apparent lack of portability is to hold down the clear key to stop it configuring.

Admittedly this is probably not often a problem, but when it is, you may be glad I mentioned it and made you think about the ramifications.

Money Back Guarantee

I've recently heard some sad stories of hobbyists buying a piece of equipment to connect to their system, getting it home, and finding it won't work on their particular unit because of an undocumented model change. The sad part comes when they try to return it and get their money back.

Whatever the legalities of the situation, some sellers refuse to accept returns for cash in the case where the unit is not actually faulty, just incompatible. So the obvious advice is to make certain you will be able to return the goods if they won't work, not just if they're faulty.

Of course, none of the big-name chains can afford to damage their reputation by such action, and it may be that your local consumer affairs department will be able to rescue you, but it's better to find out first.

Finding Out About DOS

A question to which I've not yet found a satisfactory answer is where to get an understanding of the workings of disk operating systems in the same detail that one can get into the plain level 2 system.

Part of this is because the level 2 operating system is standard by nature, whereas because of the number of disk operating systems available there is enormous ground for no standard.

Certainly the LDOS manual has a technical section, but it is very advanced, and of limited content anyway.

The IJG books (there are two dealing with TRSDOS) will add some understanding at the cost of many hours puzzling and deciphering to make the information general enough to gain a non-specific understanding. But nowhere have I found a comprehensive and non-contradictory work such as the various ROM manuals available for level 2.

I suppose many will consider they don't need to know as long as it all works, and that's fair enough – for them. But I've enjoyed understanding the workings of the level 2 system, and from the number of readers' requests I get for recommended texts on the subject, I know I'm not alone in my wish to have the same level of understanding of disk operating systems.

I don't mean I want to know what is meant by such separate mysteries as DAM, HIT, FCB and so on. What I'd like is someone to tell me, so I can pass it on to others, the source of the ultimate and full understanding of how a DOS (in general) does its thing. Please write.

Undocumented Facilities

I understand the manual that comes with the Model 4 TRSDOS (actually LDOS 6) doesn't document all the facilities that are actually present. They're the same ones that are in LDOS 5; so if you miss your favourite, try it and see.

This seems good advice in many cases: if unsure, try it – although you may find yourself in trouble if carrying this principle to extremes. □

ANNOUNCING ...

THE CONQUEROR

A COMPLETE SOLUTION

**Business/Scientific microcomputer
FOR UNDER \$3000 – Including Software**



Now we also include "Business Master" full accounting system—(A/R, A/P, G/L, Stock/Invoicing)



... THAT INCLUDES THE CONQUEROR COMPUTER WITH A DISK DRIVE AND ALL THE SOFTWARE YOU NEED TO WORK BETTER AND FASTER WITH WORDS, WITH NUMBERS, AND WITH IDEAS, NOW.

POWERFUL NEW MICRO

Z80A CPU, 4 MHz.
64K RAM
2 SLIMLINE 5¼" DSDD DRIVES
2 RS232 SERIAL PORTS
COMPACT 6" x 6" x 12" CABINET
*OPTIONAL: 256K RAM, PARALLEL PORT, ADDITIONAL SERIAL PORTS

POWERFUL SOFTWARE

COMPLETE SOFTWARE PACKAGE INCLUDING:
— CP/M COMPATIBLE OPERATING SYSTEM
— BASIC
— SYSTEM UTILITIES
— SPELLBINDER WORD PROCESSORS
— DBASE II FROM ASHTON TATE
— A TOTAL OF OVER \$3000 WORTH OF POPULAR SOFTWARE—FREE

MULTI-USER

SO YOU NEVER HAVE TO OUTGROW YOUR CONQUEROR YOU CAN EASILY UPGRADE WITH ADDITIONAL DRIVES OR HARD DISK STORAGE AND GROW TO A MULTI-USER SYSTEM WITH A MAXIMUM OF 16 USERS AS YOUR NEEDS GROW.
DATA LOGGING SYSTEMS ALSO AVAILABLE

DEALER ENQUIRIES WELCOME

Commercial and Professional Microsystems
9th Floor 505 St Kilda Road Melbourne 3004
Telephone: (03) 267 4755
Branch: 18 Park Rd Warburton 3799. (059) 66 2037



Free readers' classifieds*

FREE CLASSIFIEDS: are for readers only, not commercial organisations. Classifieds of 20 words or less accepted free of charge, for classifieds of more than 20 words the first 20 words are free, then it's 20 cents a word.

Black and white prints may be included if suitable for publication, and will be charged for at \$10 each photograph.

More than one ad in one issue will be treated as a single and charged accordingly.

COMMERCIAL RATE: Minimum 20 words, at 35 cents a word. Photographs \$20 each.

PRINT or type your ad clearly and legibly, double-spaced, and include separately your name, address and phone number for our records or checking purposes even if these details aren't all to be included in your ad.

Send it to **YOUR COMPUTER Readers' Classifieds, PO Box 21, Waterloo, NSW 2017.**

Destroyer: A fast-moving action game for the Microbee. Destroy all the buildings and land your ship without crashing. Price \$12.50 plus \$2.50 p&h. Cheng Wah, 74 Moore Street, Fitzroy 3065. Cheques etc payable to G A Taylor.

Microbee Owners: I have produced a handy wall-chart (850 x 600) which contains a number of essential items necessary for all serious programmers, including a 64 x 16 curs and screen poke format with all poke locations added, a comprehensive memory map, the complete ASCII character table, and a complete graphics layout. Only \$9.50. This includes postage. To J Kocka, 14 Tanahmerah Avenue, Tanahmerah 4128.

Wanted: Need info on NEC 8001B. How to expand memory; software, anything of interest. M Brown, 5 Baring Street, Mosman Park, Perth 6012. Tel (09) 384-6698.

Microbee: 32K, EDASM and WordBee (switch selectable), 'Ritron' green phosphor monitor with Bee power supply built in, Sharp cassette player (1200 Baud no worries!), heaps of games etc. on tape. Cost over \$850. Sell \$650 or offer. Phone Andy Hardy (045) 70-2184 bh.

Maps and Hints: For Microsoft Adventure (including the mazes) \$10.00. P Klemencic, 21 Bayswater Road, Moonah 7009.

Sinclair ZX81: 16K RAM, with 10 program tapes and some books - \$350 ono. Phone (02) 527-1154.

For Sale: Printer for TRS80-PCI and Sharp PC1211 pocket computer, all accessories included. \$95. Frank Rees, 27 King Street, Boort 3537.

Microbee Owner in Kingaroy: Wishes to contact others in the area. Phone (071) 62-3219.

Replay II: Apple copy cards, \$180. Copies software from memory without parameters. Places in DOS 3.3 file. 3AA Apple Computer Catalogue, 200 pages of Apple hardware, software, at discounted prices. 300 public domain disks, \$4.00. Hex Computing, 17 Irvine Street, Peppermint Grove 6011. Phone (09) 384-9043.

IBM & Columbia Users' Group: Meets on every second Tuesday night of each month at 7.30 pm at the Victorian College of Pharmacy. All IBM-PC compatible computer owners are welcome. For information contact Giles Bray on (03) 82-7632 ah.

ZX81: FM 1.2 amp power pack, leads, manuals, programs etc, \$120. Also 16K RAM for \$80 plus many constructional articles. F

Papadopoulos, 13 Kroombit Street, Dulwich Hill 2203.

For Sale: Sinclair ZX81, 16K RAM, ZX printer, plus \$200 software. As new. Cost price \$650. Will sell \$450. Phone (068) 62-1574.

Kaypro User Group: Sydney area; anyone interested in forming a group please contact Harry on (02) 713-1585 evenings.

For Sale: Computer magazines in good order. Personal Computing, Kilobaud. List available. Phone (03) 848-5549.

How To Buy A Personal Computer: This book explains what you need to know and gives comparisons of 24 popular PCs. Send \$6.95 Chq/MO to Ozway Consultants, PO Box 1639, North Sydney 2060.

Microbee: Printer's Mate permits the Microbee owner to make full use of a dot matrix printer. Machine language facilities provide graphics screen dump, text screen dump, memory dump and page formatting. Available for Itoh 8510, Epson RX and FX, Epson MX and the new MX-like printers, Amust 80DT, Admate DP80, CP80 etc. \$16.50 includes documentation, packing and postage. Icarus Software, 8 Maplin Place, Rossmoyne 6155.

For Sale: Apple arcade games - Snakebyte, Apple Panic, Pacman and Bug Attack. \$25 for the lot. Must sell. T Stephen, 68 Rous Road, Lismore 2480.

Brisbane PC1500/PC2 Club: Meets every third Thursday at 7.30 pm, Kelvin Grove BCAE, Room E/315. All welcome. Phone Chris (07) 395-1952 ah.

Own A VAX?: Want to read 8" CP/M floppies? CPMFloppy - \$200 from Computer Applications, PO Box 119, Innisfail 4860.

Wanted: 8 inch disk drives. Either 1 or 2 with power supply. Prefer SSSD but will consider better drives. Paul Shields, 2/39 S.M.Q., Dampier 6713. Phone (091) 83-1724 (ah), (091) 83-1000 (work).

Microbee: Stat-Pack - a graph plotting, regression, correlation and significance testing program. Tape with instructions \$15 (includes postage). Specify 16K or 32K. T Wilkins, 57 Charles Street, Marrickville 2204.

16K ZX80 Software: ZX Monopoly (two players) \$12.00; Tape Copier \$9; Shape Table Plotter \$9; the lot \$25. Send to N Kefford, 120 Church Street, Yass 2582.

Original Games For The Apple II: Write for free catalogue, Ban-Pit, 79 Lakeside Avenue, Mount Beauty 3699. Phone (057) 57-2097.

Urgent Sale: Casio FX-702P Pocket Computer + interface + printer. Hardly used. Retail \$410. Sell \$200. Contact Patrick Mead,

9 Myagah Road, Ashgrove, Brisbane. Phone (07) 38-1501.

Wanted: ZX80 for under \$40 (including adaptor and manuals). Post replies only to Matthew Croft, 31 Addison Road, Black Forest 5035.

For Sale: Printer, IDS440G Paper Tiger with dot graphics option, home use only, \$500.00 ono. Phone (049) 57-2379 after 6 pm.

Wanted: 80 column card to suit Osborne 1 computer. Cairns Computer Centre, 205 Mulgrave Road, Cairns 4870. Phone (070) 51-8010.

For Sale: The following new (or near new) television valves, valued around \$300, for sale at \$95 ono. 11AR11(1), 12AD6(1), 12AT7(1), 12AU7(1), 12BL6(2), 12BY7(3), 12FK6(1), 15BD11(1), 1B3GT(3), 1S2A(4), 1X2B(1), 5AS4(2), 6AL3(1), 6AL5(1), 6AQ5(1), 6AQ6(1), 6AU4(2), 6AU6(2), 6AV6(2), 6BA6(1), 6BA8(1), 6BE6(1), 6BM8(2), 6BQ7(2), 6BU8(1), 6BX6(3), 6BY7A(2), 6BZ6(1), 6CA7(2), 6CG7(2), 6CG8A(1), 6CK6(2), 6CM7(2), 6CQ8(4), 6CS6(2), 6CW5(2), 6CW7(4), 6DQ6B(3), 6DT6(3), 6DX8(3), 6EA8(1), 6EB6(1), 6EH7(2), 6EJ7(4), 6EM7(1), 6FC7(2), 6GL7(1), 6GV8(1), 6GW8(1), 6HG5(1), 6JW8(1), 6KV8(2), 6N3(1), 6U8(2), 6U9(2), 6Y9(3), PL36(1), and PY88(1). Phone Geoff (069) 22-4305.

VZ200 Software: 'Home Finance Package' is a menu-driven program for the VZ200. Home budget, investment, personal loans, mortgages. All this incorporated in the one program on cassette. Excellent value at \$11.95 plus \$1 p&p. Write now to K Hunter, 5 Yatama Court, Werribee 3030.

Commodore 'Microcomputer Printout' Magazine: Jan 1981 - Sept 1982 \$10.00. 'Compute!' magazine 50 cents each. 6502 Assembler Tutorial and Book (Scanlon) \$10. Programming The PET/CBM (West) \$10. PET/CBM Guide (Osborne) \$7. BASIC 4.0 In-depth (Microsoft) \$5. CBM software, adventures, games. (03) 277-5089.

Wanted To Buy: For TRS-80 Model 1. Copies of RSMZD monitor incl documentation, and documentation for Radio Shack's Editor Assembler. P Klemencic, 21 Bayswater Road, Moonah 7009.

Write off Theft: Protect your micro, video etc. With the revolutionary marker pen, invisibly mark your telephone number or other identifier. One pen will identify most items in your home/school/company. Only readable with a U.B. light. \$8.50 each. Frazer Electronics, P.O. Box 485, Ringwood, Vic. 3131

System 80: Has 16K memory, monitor, printer interface, games cassettes and touchtype instruction cassette - great value at \$440 ono. Phone Michael on (02) 450 2098.

Apple II +: Expansion cards. Digitek Pal colour encoder card - \$175. Digicard 80 column card - \$190. Ring Lesley, 9 am - 5 pm, on (03) 698 9210.

For Sale: Microbee, 16K with books and software, also connector for B/W TV. Good chance to buy popular computer. Phone (051) 54 1057.

Atari Software: Wanted to exchange. Send

me a list of what you have and I will send you my large list of games, utilities and languages. Karl Rasmusson, 47 Curtis Street, Toowoomba 4350.

Vic 20: Plus datasette and software worth \$300. Monitor and printer and 32K Ram Expansion plus manuals. Worth \$1650. Sell for \$1200 ono. Will split. Phone (053) 39 4491.

Apple II: Brand new 16K language card (\$100 ono) and joystick (\$30 ono) for sale. Phone (052) 43 5949 between 6 and 9pm.

Apple II+: Complete system with disk drive and controller, Kaga green hi-res monitor, 16K RAMcard - \$1795. Phone Chris on (03) 592 1968.

Printer: Dick Smith GP 80 (Seikosha) 30 c.p.s. Dot Matrix - \$200. Phone after hours on (02) 74 8258.

Black And White Monitor: Currently used with a MicroBee, will suit most other computers. Sells for \$150.00, you pay only \$75.00. Phone (03) 459 3327.

Atari Video Computer System: Good condition, with paddles, joysticks and Combat and Space Invaders cartridges - only \$120 ono. Phone Peter on (02) 639 6619.

For Sale: Commodore 4032 computer, cassette and manuals. Fifteen months old, condition as new - \$600 ono. Phone (058) 25 2719.

All New TRS-80/System 80 Games: Moon Scout, The Gladiator, Neutroid and Stellar Odyssey are selling fast! For free catalogue write to Fun Division, 61 Cremin Street, Upper Mt Gravatt 4122.

Sharp RS232: Suitable for the PC2/PC1500, 3 months old - \$160. Write to P.O. Box 66, Mosman Park 6012.

Sinclair ZX81: 16K full-sized keyboard, all leads, BASIC and Machine Code manuals, book of programs, some software - \$250 ono. Phone (03) 781 5496.

16K ZX81 Software: ZX Monopoly \$12, Shape Table Plotter \$9. Tape copier \$9. The lot - \$25. Write to N. Kefford, 120 Church Street, Yass 2582.

MicroBee: 32K with Edasm and Wordbee in ROM (switch selectable) and Microbee cassette deck, plus many program tapes and books. The lot - only \$425 ono. Phone Andy Hardy on (045) 70 2184 bh.

Apple II: Two disk drives, Monitor, stand, Wordstar and CPM- \$3200 ono. Seikosha GP 80M Dot Matrix printer and interface - \$250 ono. Olympia ES 100 Electronic typewriter/printer and interface - \$1800 ono (retails for \$2300). All items could be delivered and installed. Phone (02) 407 3033.

Intel Multibus SBC: Type 86/05(8086 processor). Still in original packing, with manual - \$1100 ono. Also, 8087 Maths Co-Processor \$400, GPIB interface \$400. Ideal system for number crunching. Phone D. Phillips on (085) 22 3132 ah or (085) 27 2190 bh.

For Sale: Approx 18 issues of Micro-80, and ten tapes to match ten of the magazines. Job lot only, not individual mags/tapes. \$50 ono. Phone (054) 26 1836.

Green Screen: Want the best? Like to save almost \$100? Kagadenshi high-resolution 12" monitor with circuit diagrams - a sacrifice at \$200. Please telephone (02) 579 6867 (evenings) for inspection at 27 Roberts Avenue, Mortdale 2223.

Microbee Quality Software: "Accounts Manager" provides a full set of records - ideal for those using a taxation accountant.

Can handle up to 32 separate accounts. Easy to use. Suits popular printers. Data save and load. Instructions, tape and postage - \$15. Mail order to B. Proctor, 27 Roberts Avenue, Mortdale 2223. Prompt return guaranteed.

Microbee Quality Software: "Data Manager" is not just another data base copy. It enables memory-based records to be linked to "volatile" records for efficient memory utilisation and maximum flexibility. Suitable for three-line mailing labels, up to 12-line memos, schedules, catalogues, and so on. Suits popular printers. Data save and load. Instructions, tape and postage - \$15. Mail order to B. Proctor, 27 Roberts Avenue, Mortdale 2223. Prompt return guaranteed.

Apple II: Disk drive and controller and 16K RAMcard - \$350. Phone David on (042) 61 5859.

Tandy: Expansion interface 32K - \$450. Line printer VIII with cable - \$550. Both 10 months old. Phone (02) 674 1317.

Sell Floppy Disk Drive 1: Meg Shugart SA 850/851 DSDD STD Shugart SA 800 I/O Compatible IBM 3270 Format or Hard Sector Compatible, new in box - \$390. Phone (047) 59 1721 after hours.

Modem: Direct connect 300 baud - answer/originate unused, still in carton, plus ASCII express software - \$1800. Phone (02) 337 2598 bh, or (02) 371 6026 ah.

Wanted: Cassette copy of same "Taipan" for 48K Model III TRS-80. Write to 115 McManus Street, Whitfield, Cairns.

Sell or Swap: Programs for the Apple II. Send a disk with \$5, or with programs. Nicholas Lunn, 28 Lee Parade, Leongatha 3953.

Microbee Printer's Mate: Permits the Microbee owner to make full use of a dot matrix printer. Machine language facilities provide graphics screen dump, text screen dump, memory dump and page formatting. Available for Itoh 8510, Epson RX and FX, Epson MX and the new MX-like printers Amust 80TD, Admate DP80, CP80, FAX80 and so on. \$16.50 includes documentation, packaging and postage. Icarus Software, 8 Maplin Place, Rossmoyne 6155.

VZ200 Software: 'Home Finance Package' is a menu driven program for the VZ200. Home budget, investment, personal loans and mortgages. All this incorporated in the one program on cassette. Excellent value at \$11.95, plus \$1 p and p. Write now to K Hunter, 5 Yatama Court, Werribee 3030.

Own A Vax: Want to read 8" CPM floppies? CPMFLOPPY - \$200 from Computer Applications PO Box 119, Innisfail 4860.

Replay II Apple: Copy cards - \$180. Copy software from memory without parameters. Places in DOS 3.3 file. Hex Computing, 17 Irvine Street, Peppermint Grove 6011. Phone (09) 384 9043.

3A Apple Computer Catalogue: 200 pages of Apple hardware and software at discounted prices. 300 public domain disks - \$4.00 each. Hex Computing, 17 Irvine Street, Peppermint Grove 6011. Phone (09) 384 9043.

Brisbane PC1500 Bit Fiddlers Club: Meets 7.30 pm every third Thursday at Kelvin Grove BCAE, room E/315. All owners of PC1500/PC2 as well as owners of other handheld computers are welcome. Phone Chris (07) 395 1952 after hours.

Computer And Video Exhibition: Portland

Civic Hall. 28 - 3 Feb 1984. Exhibitors wanted. Ring (055) 23 2671 during business hours and (055) 23 3729 after hours.

TRS-80 Software: Armoured Patrol, Penetrator, Flight Simulator, Asylum and more (some disk). All original, with packaging. For details phone (053) 82 1804.

Latest Rev. 7: Apple IIeuroPlus 64K with lowercase chip, 16K RAM card. B and W monitor, colour card with RF modulator. Disk Drive with controller card. Z80 softcard. 80 column card. GP-80M Seikosha dot matrix printer. Box of fan-fold printer paper. Spare printer ribbon. TKC hand paddles. TG products joystick. Includes all manuals plus extra programming books. Over \$1500 of original software plus a stack of public domain software computer fan. Box of 10 diskettes. Serial printer interface card. Plastic protective keyboard cover, \$4000 ono. Phone (089) 52 3073 anytime.

Apple Software: For sale at factory prices. Please send large self-addressed envelope to B. Knott, PO Box 3109, Alice Springs 5750.

For Sale: Vic-20 datasette, extra 8 and 3 K expanders and expansion board, 2 cartridges and tape - \$550 ono. Phone (003) 94 7263.

Hitachi Peach: 32K RAM - \$900; M.P.I. DS/SD drive plus controller card - \$550; Kaga green-screen monitor - \$150; Star DP8480 dot matrix printer - \$350. As a system - \$1900 ono. Includes cables, manuals, some programs. Phone (063) 63 1615 (ah). (063) 63 1500 (bh). Peter Farmer, 28 Ross St. Oberon 2787.

APPLE®
® Reg. T.M. Apple Computers

"COMPUTER ORCHARD"

100% Apple compatible products
direct from importer

We at Video Technology offer extremely competitive prices for these advanced design products - the ones you see advertised in the U.S.A. at prices much below those offered in this country. We guarantee your satisfaction for all merchandise for 6 months.

Video Technology are designers and wholesalers, direct to the public of computer peripheral products. See our advertisement elsewhere in this magazine.

Disk Drives \$365, Fans \$50, Joysticks \$35. Plus the following cards: Disk Control Card, 16K Ram Card, Z-80 card, RS-232C card, 80 COL card, Clock card, Printer buffer card, Wild copy card, hobby card, RGB card, 128K card, 8088 card, Speech card, Eprom card, Praxis typewriter cards.

PLUS MANY OTHER ACCESSORIES
NEW PRODUCTS EVERY MONTH:

For FREE catalog send stamped, addressed envelope. Join our catalog club, receive product update information, fast-breaking bargain information - just \$5 for one year's subscription which includes bonus voucher by return mail of \$10 discount certificate to be used for any further purchase.

FAST DELIVERIES ON RECEIPT OF YOUR ORDER - all goods via TNT Air Express. Pay by personal cheque, postal note or Bankcard. Money back guarantee: You must be delighted or return the goods within 14 days and we'll refund your money if the goods haven't been badly treated.

MAIL ORDER DIVISION OF VIDEO TECHNOLOGY
P.O. Box 217 PETERSHAM, N.S.W. 2049
Phone: (02) 568-3423 Telex: AA71115
Level One, 604 Parramatta Rd.,
Petersham, N.S.W.

AT LAST there is a Kaypro user group in Australia. A number of Victorian users have formed the Kaypro User Group of Victoria, and they can be contacted at PO Box 159, Forest Hill 3131. This is the first user group I know of, but if there are any others out there I would like to hear about your activities.

Printing Large Files

Secretary of the Victorian group, Stephen Foley, has sent a copy of the KUGVIC bulletin which contains a wealth of interesting material on the Kaypro. I particularly liked a tip from Michael Stocker for Perfect Writer users trying to cope with large files. As a general rule you should work with a number of small files rather than one big one. This saves processing time and increases the protection against disaster. When it comes to printing, however, it is often useful to be able to string a series of documents together for one print run. The @INCLUDE command allows additional files to be formatted in one pass, with all style parameters carried over from the first file.

If you tried to edit and format files on one disk the largest formatted file possible would be about 100K. To maximise the space available for the .mss files and the formatted .fin file, you need to arrange your disk space carefully.

The first step is to create a formatting disk by getting rid of the unwanted .COM files, leaving only PF.COM and PF.DAT on drive A. This leaves about 150K on drive A for the .mss files. As .fin files consume a little more space than .mss files, this will produce a file of about 160K which can be written to an empty disk on drive B. You can use up the last fraction of space by storing a .mss file of about 10K on drive B, which will push the .fin file to about 170K.

To force the system to write the .fin file to drive B, it is necessary to use the "rename" option. The command becomes A:PF -o B:name A:name.mss. Alternatively, if PF is invoked from drive B and the first file to be formatted is on drive B, then the .fin file will be automatically sent to drive B. Each INCLUDE command should explicitly reference the drive on which the .mss file is stored.

Michael mentions a limit of seven on the number of INCLUDEs, but I did not find this restriction. If in doubt, keep your document to seven or less parts.

Configuring PW For Special Printers

Several people have written about configuring Perfect Writer for special printers. The Perfect configuration routine only includes options for initialisation, reset, boldface and italics. The initialisation string can be used to distinguish between, say, 10 and 12 point type for printers that have this option. But how can you include additional options, like double-width characters for headings?

The easiest way would be to include the required command string in the text, but PW provides no means of entering sequences of control characters, such as ESCAPE. It is possible, however, to get such characters into a file. The trick is to create a utility file with character strings for the required functions. This can be read into a buffer and the required strings selected for insertion into the document. Such a file could be built with ED, which accepts most control characters, or directly from the keyboard with PIP, which will accept everything except CTRL-Z.

The idea sounds good, but doesn't work quite so well in practice. PF strips out all embedded control code sequences, so this approach won't work unless you print verbatim. It is possible that there are other options which prevent PF from removing the command strings, but I have not been able to find them.

An alternative is to utilise the options provided. For instance, if your printer does not support an italics mode, there is no reason why the command sequence for italics and the @ITALICS command cannot be pressed into service for some other function - for example, double width characters.

If you have not tried PFCONFIG yet, it is worth noting that the current values for defined printers are displayed when you attempt to edit an existing definition. If you have a printer that does not appear to be supported you should check the existing definitions to see if there is one that appears to match your printer.

Although they don't always advertise it, most printer manufacturers use a control sequence that conforms to one or more of a small number of established standards. This is particularly so for daisy wheel printers - if your printer has several alternate command sequences

that appear to do the same job, it is almost certain one of them will be Diablo compatible.

Enhancing Perfect Writer


Another correspondent, Steve Keen from Sydney, has sent some detailed information about a Perfect Writer enhancement package called Plu*Perfect. This package contains some patches to Perfect Writer, a configuration program to build a larger swap file, some CP/M utilities and some patches to CP/M.

The PW patches correct a number of errors and add a number of commands, including the ability to reset the disk system, allowing disks to be changed without exiting PW. The numeric keypad can be programmed to produce any sequence of keystrokes and the display can be scrolled up or down a specified number of lines. This last change avoids the annoying difficulty of trying to get a particular piece of text centered on the screen.

CP/M enhancements include an interactive TYPE command, allowing forward and backward scrolling through the file. Additional CP/M utilities include a fast COPY, a multiple disk copy, and a sorted directory display. The whole package costs \$US25 and can be ordered from Plu*Perfect Systems, Box 1494 Idyllwild, California 92349. It would be worth mentioning the Kaypro serial number and the PW version number when ordering, in case they have to allow for the different versions of the software.

dBase II Editing Tip

And finally, a tip for dBase II users. The Kaypro option on the configuration menu for full-screen editing does not set up the command sequences correctly for the Kaypro - it includes some unnecessary zero bytes.

The easiest way to fix the problem is to select the Kaypro option and go back to edit the codes that have been inserted. Each zero byte should be removed. For those options that the Kaypro supports this means re-entering the command strings without the zeroes. For options that are not supported (like inverse video) just hit RETURN at the first question to establish a null string. Once this is done full-screen editing on the Kaypro is very effective. 

market directory

DEALERS, distributors, mail-order houses and other commercial organisations or individuals who have a message to spread but don't want to outlay the sums required for full-scale advertising can take advantage of our Market Directory — small ads to help those searching for outlets, services and equipment. For details contact *Your Computer* on (02) 662-8888 or write to PO Box 21, Waterloo 2017.

the Computer Spot
TRADE IN YOUR VIC-20 FOR COMMODORE 64 NOW!!

Call in or phone for a special deal

SHOP C4, MLC CENTRE
 MARTIN PLACE, SYDNEY

PHONE: (02) 235 2971



MF COMPUTERS PTY LTD
 incorporated in N.S.W.
 9 Ada Avenue, Brookvale,
 Tel.: (02) 939-1800.

Standard Software

- All 8" CP/M 2.2
- Languages: Basic, Cobal, Fortran, CB80, Pascal.
- Communications Software.
- Software available for Business and Home.

COMPLETE SYSTEM FROM \$4800 (Plus tax) including the table.



MF2000

Approved by the Energy Authority of NSW.

SINCLAIR ZX SOFTWARE

From the ZX Spectrum/ZX 81 Specialists

- Utility Packs—including Sprites
- Home/Business Packs—including Text Processing
- Games—including "Adventure in Time"

All software on cassette, features a unique easy loading system and can be re-saved on micro drives etc.

Order now pay later
 Free ZX 81 and ZX Spectrum Catalogues Available with S.A.E.

Gloster Software GPO Box 5460cc
 Melbourne, 3001.

VZ 200 SOFTWARE

An increasing range of quality software. Rapid turnaround of orders and enquiries. Realistic prices and helpful user support.

SUPER INVADERS: 10 levels, fast action and great sound effects. \$10.00

PAKMAN: 4 different mazes, bonus symbols and great sound effects. \$10.00

GRAPHICS PACKAGE: Character designer, drawing commands and demonstration. \$10.00

VZ DEBUG: Disassembler and monitor combined, over 20 commands. \$20.00

BLANK DATA CASSETTES: Top quality reliable loading everytime. C12 \$ 1.85 C24 \$22.25

HANDLING CHARGES: Per order \$ 1.50

Send S.A.E. for further information or your order to:—
 R.S. Miller, 8 Mulga St, Altona 3018
 Phone enquiries: J. Hawley (03) 367 1469

ROCKSOFT COMPUTERS

Home Computer Specialists

Large stocks of books and software for

ZX Spectrum and Commodore 64

Mail Orders: Ask for our catalogue. Send SSAA
 GPO Box 5194AA, Melbourne 3001.
 P.O. Box 325, Kensington 2033.

Callers Welcome:
 7/255 Dorset Road, Boronia, Vic.
 Phone: (03) 762-6244 (24 Hours)

"Disk Drive Service And Maintenance"

Mr Floppy Pty Ltd offers full maintenance and "6 Months Service" as recommended on most brands of floppy and hard disk drives. Quick turnaround and very competitive rates.

- ★ Maintenance Contracts available.
- ★ 6 Monthly Service Contracts.
- ★ Used by Govt. departments.

MR FLOPPY PTY LTD
 9 Ada Avenue
 Brookvale N.S.W. 2100
 Tel.: (02) 939-1800. Tlx: AA73775

Laboratory Microsystems

FORTH for Z80, 8086, 68000, IBM/PC, ICL/PC

FORTH-83 interpreter-compiler with virtual memory management, assembler, customisable full screen editor, line editor, decompiler, demonstration programs and utilities. Extensions to use standard disc files and all operating systems functions. 130+ page manual.

Z80 FORTH for CP/M or MP/M \$75
8080 FORTH for ICL PC \$75
8086 FORTH for CP/M 86 \$120
PC/FORTH for IBM Personal Computer \$120
6800 FORTH for CP/M 68K \$300

Nautilus cross-compiler to modify nucleus and/or produce headerless, ROMable code
 Hosts: Z80, 8080, 8086, IBM/PC, 68000
 Targets: Z80, 8080, 8086, IBM/PC, LSI-11, 6502, 68000
 One host and one target \$350 + FORTH above
 Other FORTH extensions and packages available

MICROTRIX COMPUTER SYSTEMS
 24 Bridge St, Eltham, Vic 3095 FORTH (03) 29-2600
 Other (03) 439-5155

RS232 SWITCH PROBLEMS?



Let the RS232 tester help you solve your computer interface problems.

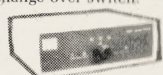
- ★ Simple Connection
- ★ No Power needed
- ★ Displays transmit data

receive data, request to send, clear to send, data set ready, data terminal ready, carrier detect.

\$38.00 post paid Plus tax.
MF COMPUTERS
 9 Ada Ave Brookvale 2100
 Tel.: (02) 939-1800. Tlx: AA73775

BIT SWITCH

"BIT SWITCH" designed for versatility of the interconnection of RS232 devices, "one in", "three out", bidirectional change-over switch.



FEATURES:

- ★ Low Cost, High Reliability 100% tested.
- ★ Compact, Fully enclosed, attractive unit.
- ★ Single P.C.B. with gold DB25 connectors.
- ★ Low Resistance, GOLD switch contacts.
- ★ Available with 8 or 24 switched lines.
- ★ 5 year "local manufacturers" warranty.

★ Simple to use ★ No maintenance ★ No power requirements.

From \$108.00 plus tax if applicable.

MF COMPUTERS PTY LTD
 9 Ada Avenue, Brookvale 2100
 Tel.: (02) 939-1800. Tlx: AA73775

MICROBEE PROGRAMS

CHOMP — For use with all Microbees including IC. This is one of the better versions of the old classic "Pac Man". It can be operated via the keyboard or with joysticks. Price \$21.00.

For software catalogue for Microbee programs please write.
 Authors: We require quality programs to market — please contact to discuss terms etc.

AURORA DATA SERVICE
 PO Box 80 Villawood 2163.
 Ph: 726-5948.

CORRECTION

LST Computers wish to apologise for any inconvenience caused. Our advert. appearing November, Your Computer, Page 118. The price of the Hitachi Level 4 Computer should have been \$3395.

LST Computers,
 477 Pacific Highway,
 Crows Nest.
 Phone: (02) 43-2771.

HUGHES Phototype

TYPESETTING BY TELEPHONE

- FROM COMPUTERS OR WORD PROCESSORS
- DISK CONVERSIONS

2 SPIT ROAD, SPIT JUNCTION, NSW 2088

960 2788

your computer services

LETTERS TO THE EDITOR: We are happy to receive your comments and, if they are of interest to other readers, publish them. Letters will only be considered for publication if they include your name and address, although we can withhold such details from publishing on request. Note that we reserve the right to (and probably will) edit all letters for the sake of brevity, clarity or accuracy.

SUBSCRIPTIONS: Standard rate within Australia, \$24; airmail \$35. Available free with membership to the Mi-Computer Club (club membership fee of \$30 includes free magazine binder and sticker). All overseas rates are a minimum \$10 (surface) or \$15 (air) higher, are quoted in (and must be paid in) Australian dollars; they are available on application. Allow up to eight weeks for subscription processing.

BACK COPIES: and single issues are available from the publisher's office (\$2) or by mail (\$2.50). We will supply photostat copies of articles where a back issue is not available, at the single-magazine price for each feature copied.

READERS' ENQUIRIES: We will make every effort to answer readers' written enquiries, if accompanied by a stamped, self-addressed envelope, although staff shortages and deadline pressures may cause delays. **Please include your telephone number(s) with any enquiry.** Phone enquiries not related to subscriptions, readers' advertisements, or other 'service information' cannot be accepted.

COPYRIGHT: All material appearing in *Your Computer* magazine is copyright and cannot be reproduced in part or in full, by any means, without the written permission of the Publisher or Managing Editor. Computer clubs and schools can, however, apply for restricted permanent reproduction rights for non-commercial, limited-circulation use (e.g. newsletters and class instruction.) Given that it sometimes takes us a while to answer such requests, you can consider that restricted permanent rights apply in these cases from the day you send in your letter, and will later be confirmed (or withdrawn) by our reply.

LIABILITY: Although it is policy to check all material used in *Your Computer* for accuracy, usefulness and suitability, no warranty, either expressed or implied, is offered for any losses due to the use of any material in this magazine.

EDITORIAL CONTRIBUTIONS: Contributions to *Your Computer* are welcomed and will be given every consideration*. Please read these notes carefully to get an idea of the style and format we prefer.

All Contributions: should include your name, address, and home and office phone numbers (in case we need to check details). Each page of your submission, and any ma-

terial sent with it, should also carry your name.

Contributions on disk: Contributions can be accepted in a wide variety of disk formats, although some we have converted outside our offices, which will add to the (often lengthy) delay between receipt and acknowledgement. The preferred medium is IBM standard format single-sided, single-density 20cm CP/M disks. We can also handle, in-office, Kaypro II and Osborne 13cm disks, MicroBee tapes and 13cm Apple DOS or Apple CP/M disks. If you have one of the formats listed by Archive Computer Services in Brisbane (usually advertised in this magazine), we can accept that too. Please pack them extremely carefully if posting and label all disks with your name, address and phone number.

Contributions By Telephone: Contributors who have modems and suitable software (in the MODEM7/YAM mould - see our stories on Christensen Protocols in the May and June 1983 issues) can arrange direct transfer to our computers, or obtain special contributor access to the Mi-Computer Club Bulletin Board system, which is on-line 24 hours a day, seven days a week.

Style: All items should be typed (or printed) and double-spaced on plain white paper. We will only accept original copies - no photostats. Include your name, address, telephone number and the date on the first page of your manuscript (all manuscript pages should have your surname and page number in the top right-hand corner). Be clear and concise, and keep jargon and adjectives to a minimum.

Listings: Unless it is absolutely impossible, we want listings produced on the computer. This reduces the risk of error - if the computer typed it, the computer probably accepted it. Print listings with a dark ribbon on white paper, and try to format the output to a narrow (40-characters) width. If they can't be produced on a printer, borrow a good typewriter - hand-written material is likely to sit around the office for a year before someone can find time to type it all out for you! Please provide an account of what the program does, how it works and so on. Any comments on the program should refer to the address, line number or label rather than to a page number. Any comments on modifying the program to work on other machines will be appreciated. Try to include a printout of at least part of a sample run if possible.

*Although the greatest care will be exercised with contributions, no responsibility can be accepted for the safety or return of any letters, manuscripts, photographs or other materials supplied to *Your Computer* magazine. If return is desired, you should include a stamped, self-addressed envelope. If return is critical - say it's something you can't afford to lose - then don't send it; we are careful, but we're not perfect, and Murphy's Law guarantees yours is the one item we'll lose this year.

advertisery index

ACT	OBC
AED	42-43
Adaptive Electronics	50
Applied Technology	76-77
Arcom Pacific (Archive)	38
Automation Statham	97
Bayne and Trembath	86
CAE Electronics	14
Case Communications	36
Centre Industries	10
City Personal Computer	8
Co-Op Bookshop	13
Comm. & Prof. Microcomputers	109
Compotron (Archive)	16
Compusoft	19
Computer Edge	86
Computer Play	13
Computer Simulations	71
Computer Spot	67
Data Parts	94
Data Universe	15
Datacare	41
DeForest Software	86
Dick Smith	46-47
Direct Computer Sales	104
Dreamcards	107
Electro Med	70
Futuretronics	20, 89
GED	87
Gammon and Gobbett	45
LST Computers	80
Lothlorien	71
Market Directory	113
Maxwell	21
MICC	99, 105
Micro-Educational	26-27
Microflex	14
Microvisions	98
Myer Computers and Business	31
Mytek	54, 60, 66, 82,
Nashua	7
Necisa	IFC, 3
Panatronics	90-91, 92
Progressive Software	IBC
Rob's Computer Centre	95
Rod Irving	34, 83
SD Computer Research	85
Sourceware	4
Southern Cross	70
Tech. Books and Magazines	8
Think Computers	10
Toshiba	32
Vic Centre	100
Video Technology	88, 111

*Proudly
presents*

Progressive Software Publishers

'LLAMASOFT'

For the

VIC 20

Computer Software

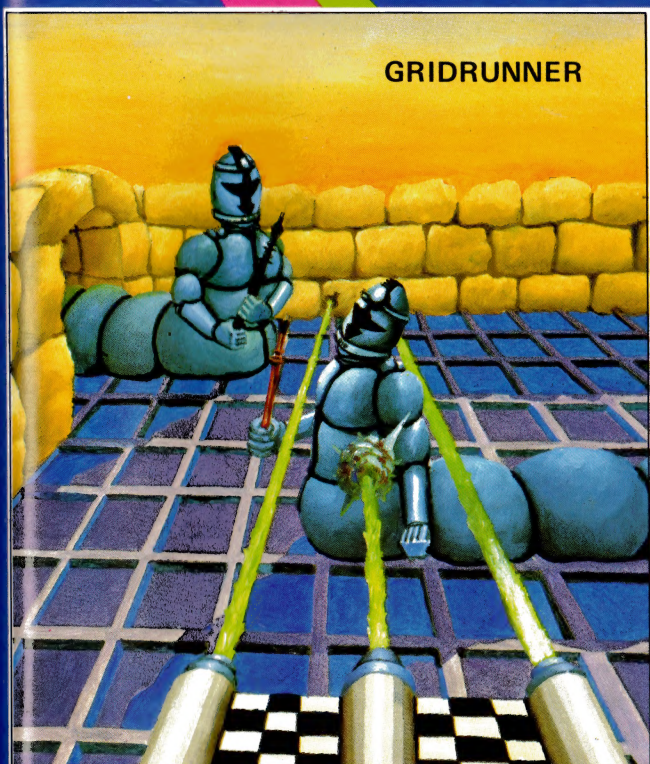
by Jeff Minter

ON CASSETTE TAPE

and

Commodore 64

*Two of our
most popular
titles*

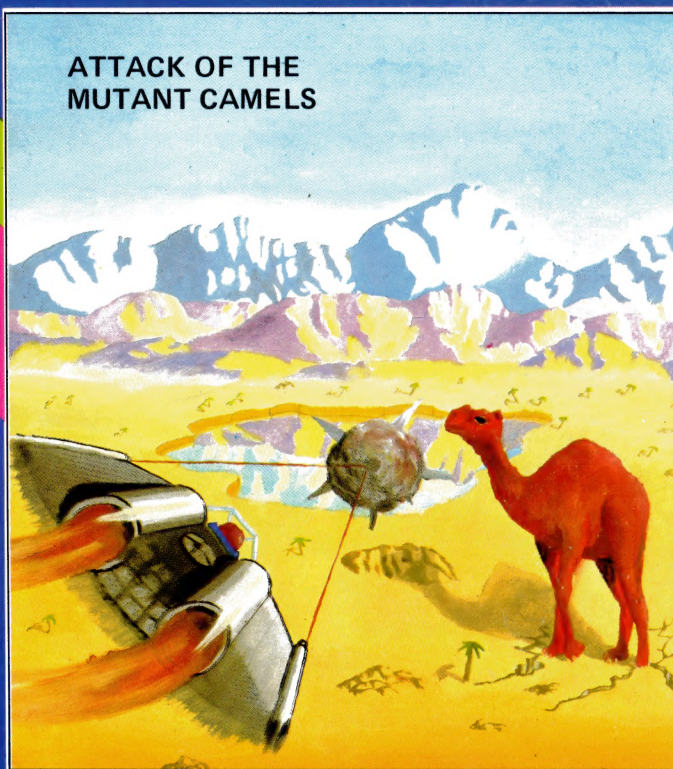


GRIDRUNNER

FOR THE COMMODORE-64

*Suggested
Retail*

Attack of the Mutant Camels.....	\$22.95
Gridrunner 64.....	\$21.95
Lazer Zone 64.....	\$22.95
Matrix 64.....	\$22.95
Rox 64.....	\$15.95



**ATTACK OF THE
MUTANT CAMELS**

FOR THE VIC-20

Abductor.....	\$19.95
Gridrunner.....	\$19.95
Andes Attack (8K).....	\$19.95
Laser Zone (8K).....	\$21.95
Matrix (8K).....	\$21.95
Traxx (8K).....	\$17.95
Blitzkreig.....	\$15.95

(8K) = Requires 8K or greater memory expansion on Vic-20

ALL TRADE ENQUIRIES FOR:
SOUTH AUSTRALIA & NORTHERN TERRITORY
UNIVERSAL SOFTWARE, P.O. BOX 583,
COWANDILLA, 5033, S.A. (08) 219-4391

VICTORIA
HIGH TECHNOLOGY, 290 BAY STREET,
BRIGHTON, 3186, VIC.
(03) 596-7130

SOLE AUSTRALIAN DISTRIBUTOR:

Progressive Software Publishers

P.O. Box 436, Pymble, N.S.W. 2073 Tel: (02) 44 6393

Selected titles available from Dick Smith Electronics

NOW AVAILABLE FROM THE FOLLOWING DEALERS

N.S.W. — Sydney City:
The Computer Spot (02) 235 2971
City Personal Computers(02) 233 8992
Albury: Data Parts (060) 218 080
Camden: Seahorse Comp.(046) 666 406
Cessnock: Moads Elect. (049) 901968
Chippendale: The Micro
Computer House (02) 698 7866
Grafton: Grafton Comp. C.(066) 426790
Kingsford: Micro Visions(02) 662 4063

Liverpool: Comput. Focus(02) 600 8222
Penrith: Comp. Lighthouse(047) 314429
W'longong: Comp. Spect.(042) 271 666
VICTORIA
Abbotsford: Maxwell O.E.(03) 419 6811
Bendigo: Data Parts (054) 434866
Minit Computer Services(054) 432589
Glen Waverley: The Computer Deli
Computer House (03) 561 7511
Greythorn: Ultraphase (03) 857 4233

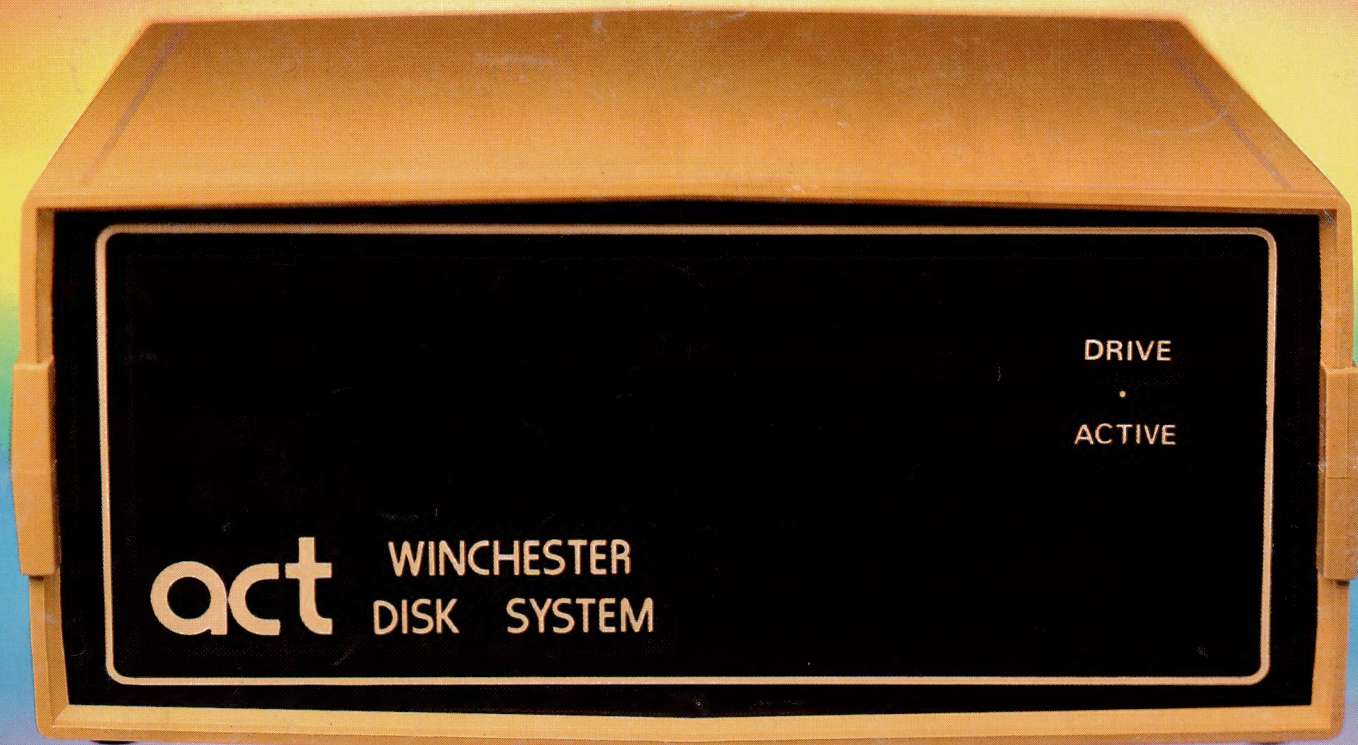
Mt. Albert: Panatronics(03) 890 0579
Richmond: High Technology
Computers (03) 429 1966
Shepparton: Data Parts(058) 217 155
QUEENSLAND
Brisbane: C.W. Elect. (07) 397 0888
Complete Computers (07) 350 1255
Southport: Scarborough Fair
Computers (075) 32 5133
Taringa: Software 80 (07) 371 6996

Townsville: Northern Computer
Sales (077) 724 2222
WESTERN AUSTRALIA
Leederville: Bruining Headlam
Computers (09) 381 2070
Osborne Park: Vic. West(09) 444 2932
A.C.T.
Fyshwick: Steve's Communication
Centre (062) 80 4339

SOUTH AUSTRALIA
Blackwood: Datapunch
Computers (08) 278 8662
Richmond: Computer Services
Company (08) 352 7911
TASMANIA
Hobart: Quantum Comp.(002) 31 0222
Launceston: Advanced
Electronics (003) 7075

Dealer enquiries welcome

WE CAN GIVE YOU THE POWER!



Make the Right Decision for Your Computer Storage:

THE POWERFUL ACT

The ACT Hard Disk System upgrades your computer to a powerful high performance machine. Supported throughout Australia, the ACT HARD DISK is the answer to your storage problems. ACT, the affordable hard disk system.

THE RELIABLE ACT

Far greater storage than floppy drives with reliable performance under all conditions, makes the ACT Hard Disk unbeatable value. Designed and manufactured in Australia.

*5-31 Megabytes of Hard Disk Storage.
5 Plus 5 Fixed/Removable Hard Disk.
5 Megabytes Removable Hard Disk Cartridge.*

THE LOGICAL ACT

The obvious choice for your micro, the ACT HARD DISK is now available for:

APPLE II • IBM PC • DEC RAINBOW
• PEACH • KAYPRO • OSBORNE
• MICRO • DECISION • MICROBEE
• HEATH ZENITH • NORTHSTAR
• SANYO • SUPERBRAIN • TANDY
• TIME OFFICE • TOSHIBA • XEROX
• S 100 • SIGMA OKI • NEW
RELEASE: SIRIUS & NEC APC.

THE SHAREABLE ACT — PC NET

PC Net is a hard disk sharing system — simple and cost effective. The disk is divided into logical drives, allowing independent users to share the disk. Available for most popular brands of microcomputer.

N.S.W.

act

75 Willoughby Road,
Crows Nest, NSW 2065
Phone: (02) 439 6300
Telex: AA 24816

S.A.

COMPUTER MART PTY LTD,
123 Gouger Street,
Adelaide, SA 5000
Phone: (08) 51 5363, 212 2888

W.A.

MICRO E.D.P. HARDWARE
9a/1 Leura Avenue,
Claremont, WA 6010
Phone: (09) 384 5511

DEALER ENQUIRIES WELCOME